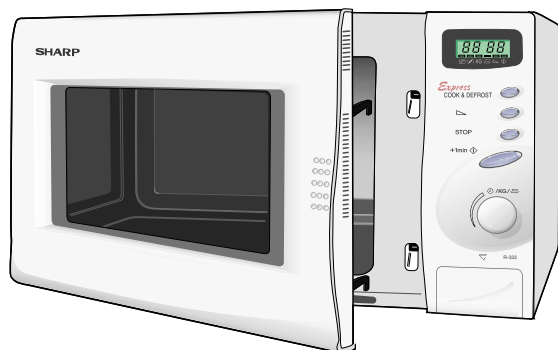


SHARP® SERVICE MANUAL

S04272R333EHW



R-333

MICROWAVE OVEN

MODELS

R-333 (W)
R-333 (B)

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

**CAUTION
MICROWAVE RADIATION**

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured. Never operate the device without a microwave energy absorbing load attached.

Never look into an open waveguide or antenna while the device is energised.

**VARNING
MIKROVAGSSTRÅLING**

Personal får inte utsättas för mikrovågsenergi som kan utstråla från magnetronen eller andre mikrovågsalstrande anordningar om dessa är felanslutna eller används på fel sätt. Alla in-och utgångsanslutningar för mikrovågor, vagledare, flänsar och packningar måste vara fast anslutna. Mikrovågsgeneratoren får inte arbeta utan att absorberande belastning är ansluten. Titta aldrig in i en öppen vagledare eller antenn när mikrovågsgeneratoren är påkopplad eller laddad.

**VAROITUS
MIKROAALTOSATEILYA**

Käyttäjä ei saa joutua alttiiksi mikroaaltoenergialle, jota voi säteillä magnetronista tai muusta mikroaaltoja kehittävästä laitteesta, jos sitä käytetään väärin tai jos se kytketään väärin. Kaikkien mikroaaltoliitaintöjen sekä syöttö-että ulostulopuolella, aaltoputkien laippojen ja tiivisteiden tulee olla varmistettuja.

Mikroaaltouunia ei koskaan saa käyttää ilman kuormaa jossa mikroaaltoenergiaa kuluu. Avoimeen aaltoputkeen tai antenniin ei koskaan saa katsoa virran ollessa kytkettynä.

**ADVARSEL
MIKRØBOLGESTRÅLING**

Personell må ikke utsettes for mikrobølge-energi som kan utstråles fra magnetronen eller andre mikrobølge-generende deler dersom apparatet feilbetjenes eller blir feiltikoplet. Alle inn-og uttilkoplinger i forbindelse med mikrobølge-strålingen, bølgeledere, flenser og tetningsringer/pakninger må festes ordentlig.

Aldri bruk apparatet med mindre en mikrobølge-absorberende last er plassert i ovnsrommet. Aldri se direkte inn i en åpen bølgeleder eller antenne imens apparatet er strømførende.

**ADVARSEL
MIKRØBOLGEBESTRÅLING**

Man bør ikke udsætte sig for mikrobølgebestråling fra magnetronen eller andre mikrobølgefrembringende anordninger, hvilket kan ske hvis apparatet er forkert tilsluttet eller bruges forkert. Alle mikrobølgeindgange og-udgange, bølgeledere, flanger og tætningsstrimler må være forsvarligt udført.

Anvend aldrig ovnen uden en mikrobølgeabsorberende anordning. Se aldrig ind i en åben bølgeleder eller antenne, mens ovnen er i brug.

SERVICE MANUAL

SHARP

MICROWAVE OVEN

R-333 (W/B)

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service Engineers with Operation and Service Information.

It is recommended that Service Engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

WARNING

| | |
|----------------|---|
| Note: | The parts marked "*" are used at voltage more than 250V. (Parts List) |
| Anm: | Delar märket med "*" har en spänning överstigande 250V. |
| Huom: | Huolto-ohjeeseen merkitty. "tähdellä" osat joissa jännite on yli 250V. |
| Bemerk: | Deler som er merket "asterisk" er utsatt for spenninger over 250V til jord. |
| Bemærk: | Dele mærket med stjerne benyttes med højere spænding end 250 volt. |

WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained Service Engineers.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to potentials above 250V.

All the parts marked "Δ" on the parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

PRODUCT SPECIFICATIONS

GENERAL INFORMATION

APPEARANCE VIEW

OPERATING SEQUENCE

FUNCTION OF IMPORTANT COMPONENTS

SERVICING AND TROUBLESHOOTING CHART

TEST PROCEDURE

TOUCH CONTROL PANEL

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

MICROWAVE MEASUREMENT TEST DATA AT A GLANCE

WIRING DIAGRAM

PARTS LIST

SHARP CORPORATION
OSAKA, JAPAN

SERVICING

WARNING TO SERVICE PERSONNEL

- (GB) Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts will result in electrocution.
High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage harness.

REMEMBER TO CHECK 3D

- 1) Disconnect the supply.
- 2) Door opened, and wedged open.
- 3) Discharge high voltage capacitor.

WARNING AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out 3D checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out 3D checks and reconnect the leads to the primary of the power transformer.

REMEMBER TO CHECK 4R

- 1) Reconnect all leads removed from components during testing.
- 2) Replace the outer case (cabinet).
- 3) Reconnect the supply.
- 4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out 3D checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test carried out.

- (NL) Magnetronovens bevatten circuits die een zeer hoge spanning en stroom kunnen voortbrengen. Contact met de volgende onderdelen kan elektrocutie tot gevolg hebben.
Hoogspanningscondensator, hoogspanningstransformator, magnetron, hoogspanningsgelijkrichter, hoogspannings kabelboom.

VERGEET DE VOLGENDE 3 STAPPEN NIET

- 1) Haal de stekker uit het stopcontact.
- 2) Open de deur en zorg ervoor dat hij niet dicht kan vallen.
- 3) Ontlaad de hoogspanningscondensator.

PAS OP VOOR DE ELECTRISCHE LADING VAN DE HOOGSPANNINGSCONDENSATOR

De hoogspanningscondensator blijft nog ongeveer 60 seconden lang opgeladen, nadat de oven is uitgeschakeld. Wacht 60 seconden voordat u de verbinding van de hoogspannings-condensator (m.a.w. de verbindingsdraad van de hoogspanningsgelijkrichter) met een geïsoleerde schroevendraaier kortsluit tegen het chassis.

Sharp beveelt ten sterkste aan dat, voor zover mogelijk, defecten worden opgespoord wanneer de stekker uit het stopcontact is gehaald. Soms is het nodig om de stroomtoevoer weer tot stand te brengen nadat de buitenmantel verwijderd is. Herhaal dan de bovengenoemde 3 stappen en haal de elektrische draden uit de primaire zijde van de vermogenstransformator. Zorg ervoor dat deze draden geïsoleerd blijven van andere elementen en van het chassis van de oven. (Gebruik zo nodig isolatieband.) Wanneer de test is uitgevoerd, herhaalt u de bovenstaande 3 stappen en verbindt u de elektrische draden weer aan de primaire zijde van de vermogenstransformator.

VERGEET DE VOLGENDE 4 STAPPEN NIET

- 1) Sluit de draden weer aan die zijn losgehaald voor de test.
- 2) Plaats de buitenmantel weer om het toestel heen (kabinet).
- 3) Stop de stekker weer in het stopcontact.
- 4) Zet de oven aan. Controleer alle functies.

Magnetronovens mogen niet leeg aangezet worden. Om te controleren of er microgolf-energie binnen de oven wordt geproduceerd, plaatst u een mok met koud water op de draaitafel van de oven, sluit de deur, zet de oven op HIGH en stelt de klok van de magnetron in op twee (2) minuten. Wanneer de twee minuten voorbij zijn (klok staat op nul), controleert u voorzichtig of het water heet is. Indien het water nog steeds koud is, herhaalt u de allereerste drie stappen en controleer nogmaals de aansluitingen naar de geteste onderdelen.

Wanneer alle reparaties zijn uitgevoerd en de oven weer in elkaar is gezet, moet de het magnetronvermogen worden gecontroleerd en moet worden gecontroleerd of er geen microgolflekage is.

SERVICING

- (E) Los hornos de microondas contienen circuitos eléctricos capaces de producir voltajes de alta tensión y descargas eléctricas. Para evitar el riesgo de electrocución, absténgase de tocar los siguientes componentes: condensador de alta tensión, transformador de alta tensión, magnetrón, dispositivo del rectificador de alta tensión y arnés de alta tensión.

RECUERDE LA COMPROBACION 3D

- 1) Desconecte la alimentación.
- 2) Deje la puerta abierta y calzada.
- 3) Descargue el condensador de alto voltaje.

ADVERTENCIA SOBRE LA CARGA DEL CONDENSADOR DE ALTO VOLTAJE

El condensador de alto voltaje permanece cargado unos 60 segundos después de haber apagado el horno. Espere 60 segundos y luego ponga en cortocircuito la conexión del condensador de alto voltaje (esto es, del conductor de conexión del rectificador de alto voltaje) al chasis con un destornillador de mango aislado.

Se recomienda encarecidamente que siempre que sea posible la localización de fallos se realice con la alimentación desconectada. Puede ser que en algunos casos sea necesario conectar la alimentación después de haber retirado la carcasa exterior. En este caso, realice las comprobaciones 3D y luego desconecte los conductores del primario del transformador de alimentación. Asegúrese de que estos conductores permanezcan aislados de otros componentes y del chasis del horno. (Use cinta aislante si es necesario). Cuando termine la prueba efectúe las comprobaciones 3D y reconecte los conductores al primario del transformador de alimentación.

RECUERDE LA COMPROBACION 4C

- 1) Conecte todos los componentes desconectados de los componentes durante la prueba.
- 2) Coloque la carcasa exterior (cabinas).
- 3) Conecte la alimentación.
- 4) Compruebe todas sus funciones después de poner en marcha el horno.

Los hornos de microondas no deben funcionar vacíos. Para comprobar la presencia de energía de microondas dentro de una cavidad, coloque una taza de agua fría en el plato giratorio del horno, cierre la puerta y ponga la potencia en HIGH (alta) y coloque el temporizador en dos (2) minutos. Cuando transcurran los dos minutos (temporizador a cero) compruebe cuidadosamente que el agua se ha calentado. Si el agua permanece fría, efectúe las comprobaciones 3D y vuelva a examinar las conexiones de los componentes que han sido probados.

Cuando haya terminado la intervención en el equipo y el horno haya sido ensamblado de nuevo completamente, deberá comprobar la potencia de salida de microondas y realizar una prueba de fugas de microondas.

- (SV) Mikrovågsugnar innehåller kretsar som producerar mycket höga spänningar och strömmar. Kontakt med följande komponenter kan leda till dödsfall: Högspänningskondensator, transformator, magnetron, högspännings likriktare, högspännings kablage.

KOM IHÅG ATT KONTROLLERA 3 STEG

- 1) Koppla från strömkällan.
- 2) Öppna dörren på glänt.
- 3) Ladda ur högspänningskondensatorn.

VARNING FÖR LADDNINGEN I HÖGSPÄNNINGSKONDENSATORN

Högspänningskondensatorn är laddad i 60 sekunder efter det att ugnen stängts av. Vänta 60 sekunder och korislut sedan kondensatoms anslutning (dvs anslutningen till högspänningslikriktaren) till chassiet med hjälp av en isolerad skruvmejsel.

Sharp rekommenderar att felsökning sker med strömmen fränkopplad. Ibland kan det vara nödvändigt att koppla på strömmen efter det att höljet avlägsnats, utför då 3 Steg kontrollen och koppla sedan från ledarna till transformatorns primärsida. Se till att ledarna är isolerade från andra komponenter och chassiet. (Använd isoleringsband om det behövs). När Du testat färdigt utför Du 3 Steg kontrollen och ansluter ledningarna till transformatorns primärsida igen.

KOM IHÅG ATT KONTROLLERA 4 STEG

- 1) Anslut alla ledningar som använts vid testning
- 2) Sätt tillbaka ytterhöljet.
- 3) Anslut strömkällan på nytt.
- 4) Sätt på ugnen. Kontrollera alla funktioner.

Mikrovågsugnar får inte användas tomma. Kontrollera mikrovågsstrålningen i olika delar av ugnen genom att placera en kopp med kallt vatten på ugnens tallrik, stäng dörren, ställ in HIGH och ställ in 2 minuter på timern. När två minuter har gått (timern visar 0) kontrollerar du om vattnet är varmt. Om vattnet fortfarande är kallt utför Du 3 steg kontroller och kontrollerar anslutningarna till varje enskild komponent på nytt.

När all service är klar och ugnen ihopskruvad skall ugnens uteffekt och eventuellt mikrovågsläckage kontrolleras.

SERVICING

I

I forni a microonde contengono un circuito elettrico in grado di generare tensioni e correnti estremamente elevate. L'eventuale contatto con i seguenti componenti può causare la folgorazione:

condensatore ad alta tensione; trasformatore ad alta tensione; magnetron; rettificatore alta tensione; cablaggio ad alta tensione.

TRE OPERAZIONI IMPORTANTI PER INCOMINCIARE

- 1) Scollegare l'alimentazione elettrica.
- 2) Verificare che la porta sia bloccata in posizione aperta.
- 3) Scaricare il condensatore ad alta tensione.

ATTENZIONE AL CONDENSATORE AD ALTA TENSIONE: PUO ESSERE CARICO

Il condensatore ad alta tensione rimane carico per circa 60 secondi dopo lo spegnimento del forno. Occorre quindi aspettare 60 secondi prima di cortocircuitare, utilizzando un cacciavite con impugnatura isolata, il collegamento del condensatore ad alta tensione (cioè del conduttore di collegamento del raddrizzatore ad alta tensione) sul telaio del forno.

Sharp raccomanda, nei limiti del possibile, che la ricerca dei guasti avvenga in assenza di alimentazione elettrica. In alcuni casi tuttavia, può essere necessario alimentare l'apparecchio dopo aver rimosso la scatola esterna. In questo caso eseguire i tre controlli sopra citati e quindi scollegare i connettori dal primario del trasformatore. Assicurarsi che tali connettori non vengano a contatto con altri componenti, né con il telaio del forno (fare uso, se necessario, di nastro isolante). Al termine dell'intervento, eseguire nuovamente i tre controlli e ricollegare i conduttori al primario del trasformatore.

QUATTRO VERIFICHE IMPORTANTI DA NON DIMENTICARE

- 1) Ricollegare tutti i conduttori staccati dai vari componenti durante l'intervento.
- 2) Rimontare la scatola esterna.
- 3) Ripristinare l'alimentazione elettrica.
- 4) Rimettere in funzione il forno. Controllare tutte le funzioni.

I forni a microonde non devono mai funzionare a vuoto. Per verificare la presenza di energia da microonde all'interno di una cavità, mettere una tazza di acqua fredda sul piatto rotante del forno, chiudere la porta, regolare la potenza su HIGH ed impostare il temporizzatore su due (2) minuti. Trascorsi i due minuti (temporizzatore a zero), controllare accuratamente che ora l'acqua sia calda. Se l'acqua è rimasta fredda, eseguire i tre controlli iniziali e verificare nuovamente i collegamenti del componente in questione.

Dopo aver portato a termine le operazioni di manutenzione e rimontato il forno, è necessario controllare la potenza delle microonde emesse ed eseguire un test per verificare che non vi sia alcuna dispersione.

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure" section.

IMPORTANT: If the oven becomes inoperative because of a blown fuse F8A in the monitored latch switch - monitor switch circuit, check the monitored latch switch and monitor switch before replacing the fuse F8A.

CAUTION/WARNING

CAUTION MICROWAVE RADIATION

Service engineers should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured. Never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

WARNING

Servicing and repair work must be carried out only by trained service engineers.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to potentials above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

WARNING

THIS APPLIANCE MUST BE EARTHED. THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

GREEN-AND-YELLOW : EARTH BLUE : NEUTRAL BROWN : LIVE

PRODUCT DESCRIPTION

SPECIFICATION

Power Requirements

230 Volts 50 Hertz Single phase, 3 wire earthed

Power Consumption

1.4 kW Approx. 6.6 A

Power Output

900W watts nominal of RF microwave energy
(measured by way of IEC 705) Operating frequency of 2450 MHz

Case Dimensions

Width 520mm
Height 305mm including foot
Depth 413mm

Cooking Cavity Dimensions

Width 342mm
Height 207mm
Depth 368mm






Turntable diameter

325mm

Control Complement

Jog Touch System
Clock (1:00-12:59 or 0:00-23:59)
Timer (0-99 minutes 90 seconds)
90 minutes
Microwave Power for Variable Cooking
Repetition Rate;

Control Complement

| | | |
|---|-------------------|--|
|  | HIGH | Full power throughout the cooking time |
|  | MEDIUM HIGH | approx. 70% of Full Power |
|  | MEDIUM | approx. 50% of Full Power |
|  | MEDIUM LOW | approx. 30% of Full Power |
|  | LOW | approx. 10% of Full Power |

AUTOMATIC PROGRAM key
STOP key
POWER LEVEL key
MINUTE PLUS/START key
ROTARY KNOB

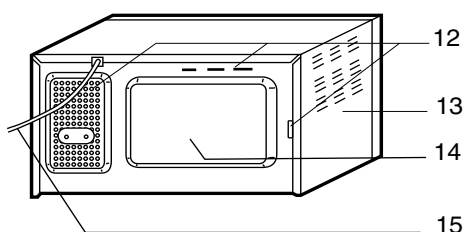
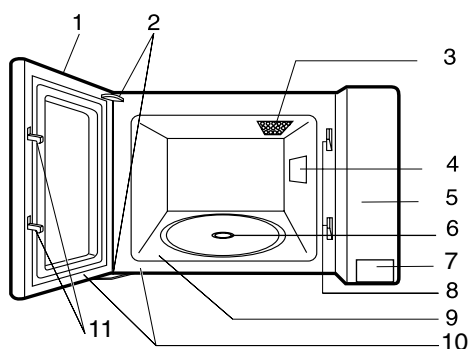
Set Weight

Approx. 17.0 kg

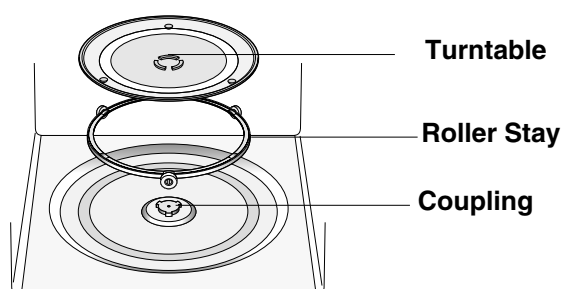
As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice

APPEARANCE VIEW

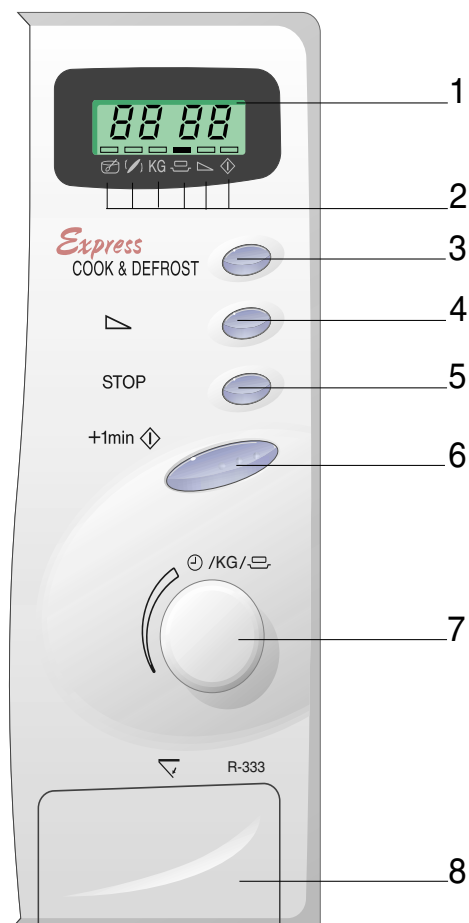
OVEN







- 1 Door
- 2 Door hinges
- 3 Oven lamp
- 4 Waveguide cover
- 5 Control panel
- 6 Coupling
- 7 Door button
- 8 Door lock openings
- 9 Oven cavity
- 10 Door seals and sealing surfaces
- 11 Safety door latches
- 12 Ventilation openings
- 13 Outer cabinet
- 14 Rear cabinets
- 15 Power supply cord



CONTROL PANEL



- 1 Digital Display
- 2 Indicators
The appropriate indicator will flash or light up, just above each symbol according to the instruction. When an indicator is flashing, press the suitable button (having the same symbol) or do the necessary operation

-  Stir
-  Turn over
- KG Weight
-  Portion Indicator
-  Microwave power level
-  Cooking in progress indicator

- 3 EXPRESS COOK & DEFROST button
Press to select one of the 11 automatic programmes.
- 4 POWER LEVEL button
- 5 STOP button
- 6 MINUTE PLUS/START button
- 7 TIMER/WEIGHT/PORTION dial
- 8 DOOR OPEN button

OPERATING SEQUENCE

OFF CONDITION

Closing the door activates all door interlock switches (monitored latch switch and stop switch).

IMPORTANT

When the oven door is closed, the monitor switch contacts **COM - NC** must be open.

When the microwave oven is plugged in a wall outlet (220-230V 50Hz), the line voltage is supplied to the point **A3+A5** in the control unit.

Figure 0-1 on page 28

1. The display flashes "88:88".
2. To set any programmes or set the clock, you must first touch the STOP pad.
3. " : " appears in the display and the time counts up every minute.

NOTE: When the oven door is opened, the oven lamp comes on at this time.

MICROWAVE COOKING CONDITION

HIGH COOKING

Enter a desired cooking time with the ROTARY KNOB and start the oven with touching START pad.

Function sequence Figure 0-2 on page 28

| CONNECTED COMPONENTS | RELAY |
|---------------------------------------|-------|
| Oven lamp, Fan motor, Turntable motor | RY1 |
| Power transformer | RY2 |

1. The line voltage is supplied to the primary winding of the power transformer. The voltage is converted to about 3.3 volts A.C. output on the filament winding and high voltage of approximately 2000 volts A.C. on the secondary winding.
2. The filament winding voltage (3.3 volts) heats the magnetron filament and the high voltage (2000 volts) is sent to the voltage doubling circuit, where it is doubled to negative voltage of approximately 4000 volts D.C..
3. The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to be cooked.
4. When the cooking time is up, a single tone is heard and the relays **RY1 + RY2** go back to their home position. The circuits to the oven lamp, power transformer, fan motor and turntable motor are cut off.
5. When the door is opened during a cook cycle, the switches come to the following condition.

| SWITCH | CONTACT | CONDITION | |
|------------------------|---------|----------------|------------------------|
| | | DURING COOKING | DOOR OPEN (NO COOKING) |
| Monitor switch | COM-NC | Open | Closed |
| | COM-NO | Closed | Open |
| Monitored latch switch | COM-NO | Closed | Open |
| Stop switch | COM-NO | Closed | Open |

The circuits to the power transformer, fan motor and turntable motor are cut off when the monitored latch switch and stop switch are made open.

6. MONITOR SWITCH CIRCUIT

The monitor switch **SW2** is mechanically controlled by oven door, and monitors the operation of the monitored switch **SW1**

- 6-1 When the oven door is opened during or after the cycle of cooking program, the monitored latch and stop switches **SW1 + SW3** must open their contacts first. After that the contacts (**COM - NC**) of the monitor switch **SW2** can be closed and then contacts of the monitored latch switch **SW1** can be opened.
- 6-2 When the oven door is closed, the contacts (**COM - NC**) of the monitor switch **SW2** must be opened first and the contacts (**COM - NO**) of the monitored latch switch **SW1** and stop switch **SW3** must be closed first. After that the contacts of the monitored latch and stop switches **SW1 + SW3** are closed.
- 6-3 When the oven door is opened and the contacts of the monitored latch switch **SW1** remain closed, the fuse **F8A** will blow, because the monitor switch is closed and a short circuit is caused.

HIGH, MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When the microwave oven is preset for variable cooking power, the line voltage is supplied to the power transformer intermittently within a 32-second time base through the relay contact which is coupled with the current-limiting relay **RY2**. The following levels of microwave power are given.

SETTING

| | | | |
|-------------|------------|-------------|------------------------|
| HIGH | 32 sec. ON | | 100% = 900Watts |
| | | | |
| MEDIUM HIGH | 24 sec. ON | 8 sec. OFF | Approx. 70% = 630Watts |
| | | | |
| MEDIUM | 18 sec. ON | 14 sec. OFF | Approx. 50% = 450Watts |
| | | | |
| MEDIUM LOW | 12 sec. ON | 20 sec. OFF | Approx. 30% = 270Watts |
| | | | |
| LOW | 6 sec. ON | 26 sec. OFF | Approx. 10% = 90Watts |
| | | | |

NOTE: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 3 seconds are needed for heating up the magnetron filament.

FUNCTION OF IMPORTANT COMPONENTS

DOOR OPEN MECHANISM

The door can be opened by pushing the door open button on the control panel. When the door open button is pushed, the cook lever is moved upward, operating the latch head. The latch head is moved upward, and released from the latch hook. Now, the door can be opened.

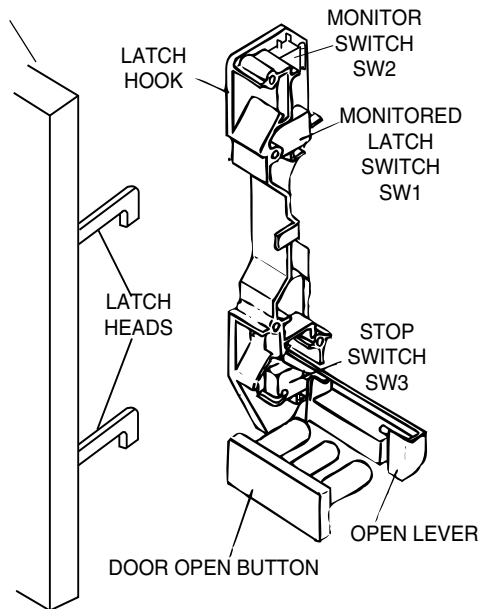


Figure D-1. Door Open Mechanism

MONITORED LATCH SWITCH SW1 STOP SWITCH SW3

1. When the oven door is closed, the contacts (COM - NO) must be closed.
2. When the oven door is opened, the contacts (COM - NO) must be opened.

MONITOR SWITCH SW2

1. When the oven door is closed, the contacts (COM - NC) must be opened and the contacts (COM - NO) must be closed.
2. When the oven door is opened, the contacts (COM - NC) must be closed and the contacts (COM - NO) must be closed.
3. If the oven door is opened and the contacts (COM - NO) of the monitored latch switch SW1 fail to open, the fuse F1 F8A blows simultaneously with closing the contacts (COM - NC) of the monitor switch SW2.

CAUTION: BEFORE REPLACING A BLOWN FUSE F1 F8A TEST THE MONITORED LATCH SWITCH SW1, MONITOR SWITCH SW2 FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE".)

FUSE F1 F8A 250V

1. If the wire harness or electrical components are short-circuited, this fuse blows to prevent an electric shock or fire hazard.
2. The fuse also blows when monitored latch switch SW1 remains closed with the oven door open and when the monitor switch SW2 closes.
3. The fuse blows when the asymmetric rectifier, H.V. rectifier, H.V. wire harness, H.V. capacitor, magnetron or secondary winding of power transformer is shorted.

THERMAL CUT-OUT 125°C TC1 (MG)

The thermal cut-out protects the magnetron against overheat. If this temperature goes up higher than 125°C because the fan motor is interrupted, the ventilation openings are blocked, the thermal cut-out TC1 will open and line voltages to the power transformer T will be cut off and the operation of the magnetron MG will be stopped. The defective thermal cut-out TC1 must be replaced with new one.

THERMAL CUT-OUT 125°C TC2 (OVEN)

The thermal cut-out located on the top of the oven cavity is designed to prevent damage to the oven if the foods in the oven catch fire due to over heating produced by improper setting of cook time or failure of control unit. Under normal operation, the oven thermal cut-out remains closed. However, when abnormally high temperatures are reached within the oven cavity, the oven thermal cut-out will open at 125°C, causing the oven to shut down. The defective thermal cut-out TC2 must be replaced with new one.

TURNTABLE MOTOR

The turntable motor drives the turntable roller assembly to rotate the turntable.

FAN MOTOR

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapours given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

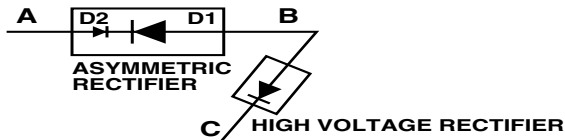
NOISE FILTER

The noise filter prevents the radio frequency interference that might flow back in the power circuit.

FUNCTION OF IMPORTANT COMPONENTS

ASYMMETRIC RECTIFIER

The asymmetric rectifier is a solid state device that prevents current flow in both directions. It prevents the temperature rise of the power transformer by blowing the special fuse F1 when the high voltage rectifier is shorted.



The rated peak reverse voltage of D1 of the asymmetric rectifier is 6 KV. The rated peak reverse voltage of D2 of the asymmetric rectifier is 1.7 KV. D1 and D2 of the asymmetric rectifier or high voltage rectifier are shorted when the each peak reverse voltage goes beyond the each rated peak reverse voltage.

(The process of blowing the fuse F1)

1. The high voltage rectifier is shorted by any causes when microwave cooking.
2. The peak reverse voltage of D2 of the rectifier goes beyond the rated peak reverse voltage 1.7 KV in the voltage doubler circuit.
3. D2 of the rectifier is shorted.
4. The large electric currents flow through the high voltage winding of the power transformer.
5. The large electric currents beyond 8A flow through the primary winding of the power transformer.
6. The fuse F1 blows by the large electric currents.
7. The power supply to the power transformer is cut off.

TEST PROCEDURES

| TEST PROCEDURE | | A | B | C | D | E | E | E | F | G | H | K |
|--|--|-----------|-------------------|-----------------------|--------------|------------------------|----------------|-------------|----------------------|--------------|--------------|-----------|
| POSSIBLE CAUSE AND DEFECTIVE PARTS | | MAGNETRON | POWER TRANSFORMER | HV RECTIFIER ASSEMBLY | HV CAPACITOR | MONITORED LATCH SWITCH | MONITOR SWITCH | STOP SWITCH | THERMAL CUT-OUT 125C | SPECIAL FUSE | NOISE FILTER | FAN MOTOR |
| CONDITION | PROBLEM | | | | | | | | | | | |
| OFF CONDITION | Home fuse blows when power cord is plugged into wall outlet. | | | | | | | | | | | |
| | Fuse F8A blows when the door is opened. | | | | | ○ | | | | | | |
| | Special fuse blows when power supply cord is plugged into wall outlet. | | | | | | ○ | | | | ○ | |
| | "88:88" does not appear in display when power cord is plugged into wall outlet. | | | | | | | | ○ | ○ | ○ | |
| | Display does not operate properly when STOP pad is touched. | | | | | | | ○ | | | | |
| | Oven lamp does not light when door is opened. (Display appears.) | | | | | | | ○ | | | | |
| COOKING CONDITION | Oven does not start when START pad is touched. (Display appears.) | | | | | | | ○ | | | | |
| | Oven lamp does not light. (Display appears.) | | | | | | | | | | | |
| | Fan motor does not operate. (Display appears.) | | | | | ○ | | | | | | ○ |
| | Turntable motor assembly does not operate. (Display appears.) | | | | | ○ | | | | | | |
| | Oven or any electrical parts do not stop when cooking time is 0 or STOP pad is touched. | | | | | | | | | | | |
| | Oven seems to be operating but little or no heat is produced in oven load. (Microwave power level is set at "HIGH") | ○ | ○ | | ○ | ○ | | | | | | |
| | Oven does not operate properly during the variable cooking condition except "HIGH" cooking condition. (Oven stops when STOP pad is touched.) | | | | | | | | | | | |
| | Oven goes into cook cycle but shuts down before end of cooking cycle. | | | | | | | | ○ | ○ | | |
| | Oven stops as soon as the START pad is touched. | | | ○ | | | | | | ○ | | |

TEST PROCEDURES

| | L | N | O | | | | | | | | | | | | | | | | |
|------------------------|---------------------------|-------------------|-----------------------------|------------------------------|---------------------------|-------------------------|------------------------------|-----------------------------|----------------|--|--|--|--|--|--|--|--|--|--|
| TURN TABLE MOTOR | TOUCH CONTROL PANEL | RELAYS RY1-RY2 | FOIL PATTERN ON P.W.B | OVEN LAMP OR SOCKET | MISADJUSTMENT SWITCHES | POWER SUPPLY CORD | SHORTED WIRE HARNESSES | OPENED WIRE HARNESSES | WALL OUTLET | | | | | | | | | | |
| | | | | | | ○ | ○ | | | | | | | | | | | | |
| | | | | | ○ | | | | | | | | | | | | | | |
| | | | | | ○ | | | | | | | | | | | | | | |
| | ○ | | ○ | | | ○ | | ○ | ○ | | | | | | | | | | |
| | ○ | | | | ○ | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | ○ | | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | | ○ | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | ○ | | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | | | | | ○ | | | | | | | | | | | |
| ○ | | ○ | | | ○ | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | | | | | | | | | | | | | | | | |
| | ○ | ○ | | | ○ | | | ○ | | | | | | | | | | | |
| | ○ | ○ | | | | | | | | | | | | | | | | | |
| | ○ | ○ | | | | | | | | | | | | | | | | | |
| | | | | | | | | ○ | | | | | | | | | | | |
| | | | | | | | ○ | | | | | | | | | | | | |

TEST PROCEDURES

| PROCEDURE LETTER | COMPONENT TEST | | | | | | | | | | | | |
|-----------------------|--|---------------------------|-------------------------------|---------------------------|---------------|-----------------|--------|--------------------------|-------------------------------|--|--|-------------------|-----------|
| A | <div>MAGNETRON TEST</div> <div>NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.</div> <div>CARRY OUT 3D CHECK</div> <p>Isolate the magnetron from the high voltage circuit by removing all leads connected to the filament terminal.</p> <p>To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.</p> <p>To test for a short circuit filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.</p> <div>MICROWAVE OUTPUT POWER (IEC-60705)</div> <p>The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 705, i.e. it can be measured by using water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately $P \times t / 4.187$ calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT ($^{\circ}\text{C}$) during this microwave heating period, the calorie of the water is $V \times \Delta T$.</p> <div><p>The formula is as follows;</p>$P \times t / 4.187 = V \times \Delta T \qquad P \text{ (W)} = 4.187 \times V \times \Delta T / t$<p>Our condition for water load is as follows:</p><table><tr><td>Room temperature.....</td><td>around 20$^{\circ}\text{C}$</td><td>Power supply Voltage.....</td><td>Rated voltage</td></tr><tr><td>Water load.....</td><td>1000 g</td><td>Initial temperature.....</td><td>10 \pm 2$^{\circ}\text{C}$</td></tr><tr><td></td><td></td><td>Heating time.....</td><td>46.5 sec.</td></tr></table>$P = 90 \times \Delta T$</div> <p>Measuring condition:</p> <ol style="list-style-type: none">Container The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.Temperature of the oven and vessel The oven and the empty vessel are at ambient temperature prior to the start of the test.Temperature of the water The initial temperature of the water is (10 \pm 2)$^{\circ}\text{C}$.Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5K.Select stirring devices and measuring instruments in order to minimize addition or removal of heat.The graduation of the thermometer must be scaled by 0.1$^{\circ}\text{C}$ at minimum and an accurate thermometer.The water load must be (1000 \pm 5) g.“t” is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included. <p>NOTE: The operation time of the microwave oven is “t + 3” sec. 3 sec. is magnetron filament heat-up time.</p> <p>Measuring method:</p> <ol style="list-style-type: none">Measure the initial temperature of the water before the water is added to the vessel. (Example: The initial temperature T1 = 11$^{\circ}\text{C}$)Add the 1 litre water to the vessel.Place the load on the centre of the shelf.Operate the microwave oven at HIGH for the temperature of the water rises by a value ΔT of (10 \pm 2) K.Stir the water to equalize temperature throughout the vessel. | Room temperature..... | around 20 $^{\circ}\text{C}$ | Power supply Voltage..... | Rated voltage | Water load..... | 1000 g | Initial temperature..... | 10 \pm 2 $^{\circ}\text{C}$ | | | Heating time..... | 46.5 sec. |
| Room temperature..... | around 20 $^{\circ}\text{C}$ | Power supply Voltage..... | Rated voltage | | | | | | | | | | |
| Water load..... | 1000 g | Initial temperature..... | 10 \pm 2 $^{\circ}\text{C}$ | | | | | | | | | | |
| | | Heating time..... | 46.5 sec. | | | | | | | | | | |

TEST PROCEDURES (CONT.)

PROCEDURE LETTER

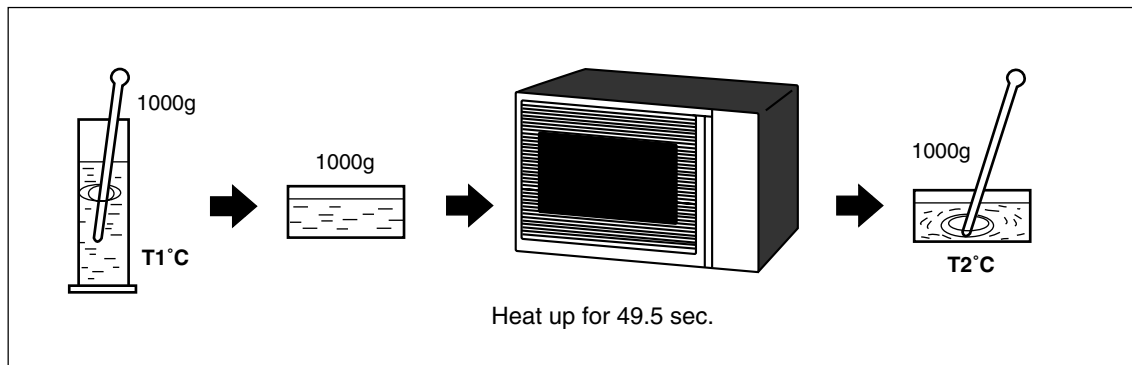
COMPONENT TEST

6. Measure the final water temperature. (Example: The final temperature $T_2 = 21^\circ\text{C}$)
7. Calculate the microwave power output P in watts from above formula.

| | |
|--|--|
| Initial temperature | $T_1 = 11^\circ\text{C}$ |
| Temperature after $(46.5 + 3) = 49.5$ sec. | $T_2 = 21^\circ\text{C}$ |
| Temperature difference Cold-Warm | $\Delta T_1 = 10^\circ\text{C}$ |
| Measured output power | |
| The equation is " $P = 90 \times \Delta T$ " | $P = 90 \times 10^\circ\text{C} = 900 \text{ Watts}$ |

JUDGEMENT: The measured output power should be at least $\pm 15\%$ of the rated output power.

CAUTION: 1°C CORRESPONDS TO 90 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



B

POWER TRANSFORMER TEST

WARNING: High voltages and large currents are present at the secondary winding and filament winding of the power transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS

Disconnect the leads to the primary winding of the power transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:-

- a. Primary winding 1.9 ohms approximately
- b. Secondary winding 127 ohms approximately
- c. Filament winding less than 1 ohm

If the reading obtained are not stated above, then the power transformer is probably faulty and should be replaced.

CARRY OUT 4R CHECKS

C

HIGH VOLTAGE RECTIFIER ASSEMBLY TEST

HIGH VOLTAGE RECTIFIER TEST

CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B + C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading. The normal resistance is infinite in one direction and more than 100 k Ω in the other direction.

TEST PROCEDURES (CONT.)

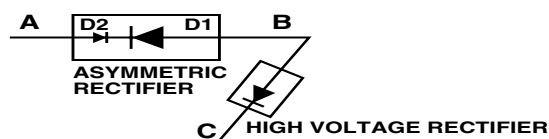
PROCEDURE LETTER

COMPONENT TEST

CARRY OUT 4R CHECKS

ASYMMETRIC RECTIFIER TEST

CARRY OUT 3D CHECKS.



Isolate the high voltage rectifier assembly from the HV circuit. The asymmetric rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminals A + B of the asymmetric rectifier and note the reading obtained. Reverse the meter leads and note this second reading. If an open circuit is indicated in both directions then the asymmetric rectifier is good. If an asymmetric rectifier is shorted in either direction, then the asymmetric rectifier is probably faulty and must be replaced with the high voltage rectifier. When the asymmetric rectifier is defective, check whether magnetron, high voltage rectifier, high voltage wire or filament winding of the power transformer is shorted.

CARRY OUT 4R CHECKS

NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

D

HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS

- A. Isolate the high voltage capacitor from the circuit.
- B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
- C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about 10 MΩ after it has been charged.
- D. A short-circuited capacitor shows continuity all the time.
- E. An open capacitor constantly shows a resistance about 10 MΩ because of its internal 10 MΩ resistance.
- F. When the internal wire is opened in the high voltage capacitor, the capacitor shows an infinite resistance.
- G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal. If incorrect readings are obtained, the high voltage capacitor must be replaced.

CARRY OUT 4R CHECKS

E

SWITCH TEST

CARRY OUT 3D CHECKS

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

Table: Terminal Connection of Switch

| Plunger Operation | COM to NO | COM to NC |
|-------------------|---------------|---------------|
| Released | Open circuit | Short circuit |
| Depressed | Short circuit | Open Circuit |

COM; Common terminal
NO; Normally open terminal
NC; Normally close terminal

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

TEST PROCEDURES (CONT.)

PROCEDURE LETTER

COMPONENT TEST

F

THERMAL CUT OUT TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the terminals of the thermal cut-out. Then using an ohmmeter, make a continuity test across the two terminals as described below.

CARRY OUT 4R CHECKS

Temperature of "ON" condition (closed circuit) This is not resetable type
 Temperature of "OFF" condition (open circuit) Above 125°C
 Indication of ohmmeter (When room temperature is approx. 20°C.) Closed circuit

If incorrect readings are obtained , replace the thermal cut-out.

An open circuit thermal cut-out (MG) indicates that the magnetron has overheated, this may be due to restricted ventilation, cooling fan failure or a fault condition within the magnetron or HV circuit.

An open circuit thermal cut-out (OVEN) indicates that the foods in the oven may catch fire, this may be due to over heating produced by improper setting of the cooking timer or failure of the control panel.

G

BLOWN SPECIAL FUSE F8A

CARRY OUT 3D CHECKS

1. If the special fuse F1 is blown, there could be shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.
2. If the special fuse F1 is blown, there could be a short in the asymmetric rectifier or there is a ground in wire harness. A short in the asymmetric rectifier may have occurred due to short or ground in H.V. rectifier, magnetron, power transformer or H.V. wire. Check them and replace the defective parts or repair the wire harness.
3. If the fuse F1 8A is blown when the door is opened, check the primary latch switch, monitor switch and monitor resistor.
 If the fuse F1 8A is blown by incorrect door switching replace the defective switch(s) and the fuse F1 8A.

CARRY OUT 4R CHECKS

CAUTION: Only replace special fuse F1 with the correct value replacement

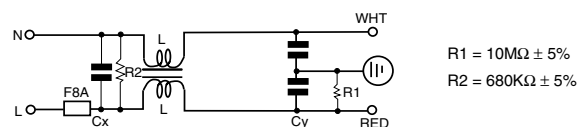
H

NOISE FILTER TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the terminals of the noise filter.

Using an ohmmeter, check between the terminals as described in the following table.



| L(min) | Cx ± 20% | Cy ± 20% |
|--------|----------|----------|
| 1mH | 0.22μF | 0.0033μF |

| MEASURING POINTS | INDICATION OF OHMMETER |
|------------------------------|------------------------|
| Between N and L | >100MΩ ohm |
| Between terminal N and WHITE | Short circuit |
| Between terminal L and RED | Short circuit |

.ssp If incorrect readings are obtained, replace the noise filter unit.

CARRY OUT 4R CHECKS

TEST PROCEDURES (CONT.)

PROCEDURE LETTER

COMPONENT TEST

J

MOTOR WINDING TEST

CARRY OUT 3D CHECKS

Disconnect the leads from the motor. Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

| Motors | Resistance |
|-----------------|----------------------|
| Fan motor | Approximately 218Ω |
| Turntable motor | Approximately 15.5kΩ |

If incorrect readings are obtained, replace the motor.

CARRY OUT 4R CHECKS

K

LIVE TEST FOR MOTOR WINDINGS

CAUTION: The following procedure requires the oven to be connected to the supply and should only be used if the relevant "cold" checks for the motor under test are inconclusive.

1. CARRY OUT 3D CHECKS
2. Disconnect the leads from the primary of the power transformer. Make sure that the leads remain isolated from other oven components and chassis. (Use insulation tape if necessary.)
3. Connect a voltmeter, set to 250V AC, across the motor terminals. (Refer to the relevant motor test procedure or pictorial diagram for the correct terminal numbers.)
4. Arrange the meter in a position where it can be read during the test.
(Do not touch the meter, meter leads or oven circuitry while the oven is active.)
5. Close the oven door.
6. Set the power level to HIGH and set the relevant timer for about three (3) minutes.
7. Note the reading on the meter and carefully observe the motor under test to see if it is turning.
8. CARRY OUT 3D CHECKS
9. Remove test meter leads.
10. Reconnect the leads to the primary of the power transformer.

If a reading of the line voltage was obtained (step 7) but the motor was not turning then it is faulty and should be replaced. If the meter indicated that no supply was present then the wiring to the motor should be checked for continuity.

L

TOUCH CONTROL PANEL ASSEMBLY TEST

CAUTION

Do not touch the electrical parts and the printed wiring board to prevent an electric shock. Because the control unit is "TRANSLESS CIRCUIT" and all electrical parts are used at A.C. line voltage.

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance can not be performed with only a voltmeter and ohmmeter.

In this service manual, the touch control panel assembly is in one unit and troubleshooting by unit replacement is described according to the symptoms indicated.

Control Panel.

The following symptoms indicate a defective control unit.

1. Tact Switch.
The following symptoms indicate a defective tact switch. Replace the tact switch.
 - a) When touching a tact switch, a certain tact switch produces no signal at all.
 - b) When touching a tact switch, sometimes a tact switch produces no signal.
2. In connection with tact switches.
 - a) When touching a tact switch, a certain group of tact switch do not produce a signal.
 - b) When touching a tact switch, no tact switch produce a signal.
3. Display problems.
 - a) At a certain digit, all or some segments do not light up.
 - b) At a certain digit, brightness is low.
 - c) Only one indicator does not light up.
 - d) The corresponding segments of all digits do not light up; or they continue to light up.

TEST PROCEDURES (CONT.)

PROCEDURE LETTER

COMPONENT TEST

- e) Wrong figure appears.
- f) A certain group of indicators do not light up.
- g) The figure of all digits flicker.
- h) When touching a tact switch, the control unit does not respond.
- 4. Other possible problems caused by defective control unit.
 - a) Buzzer does not sound or continues to sound.
 - b) Cooking is not possible.

M

TACT SWITCH TEST

1. Disconnect the oven from the power supply.
2. Discharge the high voltage capacitor.
3. Remove the control unit from the control panel.
4. By using an ohmmeter, check the tact switch operation.
5. When the tact switch is not depressed, an ohmmeter should indicate an open circuit. When the tact switch is depressed, an ohmmeter should indicate a short circuit. If improper operation is indicated, the tact switch is probably defective and should be checked.

N

RELAY TEST

Remove the outer case and check voltage between Pin No 5 of the 3 pin connector (A) and common terminal of the relay (RY2) on the control unit with an A.C. voltmeter. The meter should indicate rated voltage, if not check oven circuit.

RY1 and RY2 Relay Test

These relays are operated by D.C. voltage

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.

DC. voltage indicated Defective relay.

DC. voltage not indicated Check diode which is connected to the relay coil. If diode is good, control unit is defective.

| RELAY SYMBOL | OPERATIONAL VOLTAGE | CONNECTED COMPONENTS |
|--------------|---------------------|---|
| RY1 | Approx. 18.0V D.C. | Oven lamp / Turntable motor / Cooling fan motor |
| RY2 | Approx. 7.0V D.C. | Power transformer |

O

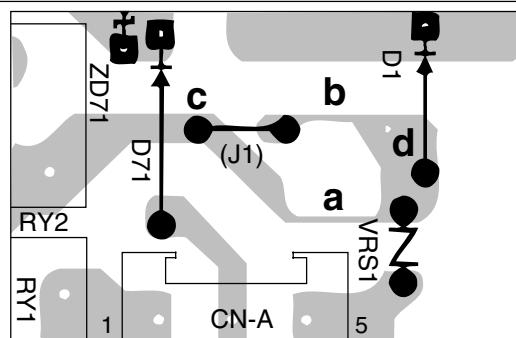
PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN

To protect the electronic circuits, this model is provided with a fine foil pattern added to the input circuit on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.

Problem: POWER ON, indicator does not light up.

| STEPS | OCCURRENCE | CAUSE OR CORRECTION |
|-------|---|---|
| 1 | The rated voltage is not applied between Pin No. 5 of the 3 pin connector (A) and the common terminal of the relay RY2. | Check supply voltage and oven power cord. |
| 2 | Only pattern at "a" is broken. | *Insert jumper wire J1 and solder. |
| 3 | Pattern at "a" and "b" are broken. | *Insert the coil RCILF2003YAZZ between "c" and "d". |

NOTE: *At the time of making these repairs, make a visual inspection of the varistor. Check for burned damage. If any abnormal condition is detected, replace the defective parts.



OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following circuits as shown in the touch control panel circuit.

The principal functions of these circuits and their related signals are explained below.

Tact Switch

Signals generated in the LSI are sent to the tact switches through R60, R61, R62 and R63.

When a tact switch is touched, a signal is completed through the tact switch and passed back to the LSI through R81 to perform the function that was requested.

Control Unit

Control unit consists of LSI, ACL circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit and back light circuit.

1) ACL

This circuit generates a signal which resets the LSI to the initial state when power is supplied.

2) Indicator Circuit

This circuit consists of 4-digits, 12-segments and 3-common electrodes using a Liquid Crystal Display.

3) Power Source Circuit

This circuit generates voltage necessary in the control unit from the AC line voltage.

| Symbol | Voltage | Application |
|--------|---------|-------------|
| VC | +5V | LSI(IC1) |

4) Relay Circuit

To drive the magnetron, fan motor, turntable motor and light the oven lamp.

5) Buzzer Circuit

The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

6) Synchronizing Signal Circuit

The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

7) Door Sensing Switch

A switch to "tell" the LSI if the door is open or closed.

8) Encoder

The encoder converts the signal generated by LSI into the pulse signal, and the pulse signal is returned to the LSI.

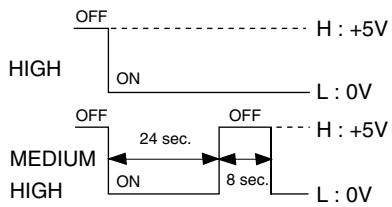
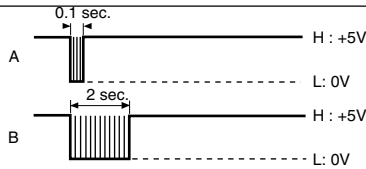
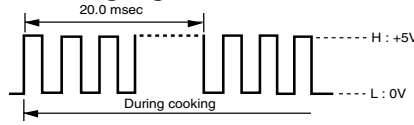
9) Back Light Circuit

A circuit to drive the back light (Light emitting diodes LED1-LED3)

DESCRIPTION OF LSI

LSI(IZA786DR)

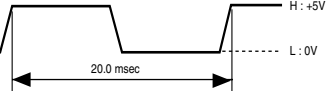
The I/O signal of the LSI(IZA786DR) are detailed in the following table.

| Pin No. | Signal | I/O | Description |
|---------|--------------|-----|--|
| 1-12 | SEG0 - SEG11 | OUT | Segment data signal. Connected to LCD. The relation between signals are as follows: LSI signal (Pin No.) LCD (Pin No.) LSI signal (Pin No.) LCD (Pin No.) SEG 0 (1) S12(4) SEG 6 (7) S6(10) SEG 1 (2) S11(5) SEG 7 (8) S5(11) SEG 2 (3) S10(6) SEG 8 (9) S4(12) SEG 3 (4) S9(7) SEG 9 (10) S3(13) SEG 4 (5) S8(8) SEG 10 (11) S2(14) SEG 5 (6) S7(9) SEG 11 (12) S1(15) |
| 13 | R60 | OUT | Tact switch strobe signal. Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW4 is touched. |
| 14 | R61 | OUT | Tact switch strobe signal. Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW3 is touched. |
| 15 | R62 | OUT | Tact switch strobe signal. Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW2 is touched. |
| 16 | R63 | OUT | Tact switch strobe signal. Signal applied to tact switch section. A pulse signal is input to R81 terminal while the tact switch SW1 is touched. |
| 17 | AIN0 | IN | To input signal which communicates the door open/close information to LSI. Door close "L" level signal (0V). Door open "H" level (+5V) |
| 18-20 | AIN1-AIN3 | IN | Terminal to change functions according to the Model. By using the A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its function. |
| 21 | VSS | IN | Power source voltage: 0V. VSS voltage of power source circuit input. |
| 22 | R70 | OUT | Magnetron high-voltage circuit driving signal. To turn on and off the cook relay (RY2). The signals holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (variable cooking) the signal turns to "H" level and "L" level in repetition according to the power level.  |
| 23 | R71 | OUT | Signal to sound buzzer (2.0 kHz). A: key touch sound. B: Completion sound.  |
| 24 | R72 | OUT | Oven lamp, fan motor and turntable motor driving signal. To turn on and off shut off relay (RY1). The square waveform voltage is delivered to the RY1 driving circuit.  |

DISCRIPTION OF LSI

LSI(IZA786DR)

The I/O signal of the LSI(IZA786DR) are detailed in the following table.

| Pin No. | Signal | I/O | Description |
|---------|---------|--------|--|
| 25 | R73 | IN | Signal coming from encoder. When the encoder is turned, the contacts of encoder make pulse signals. And pulse signals are input into R73. |
| 26 | INT2 | IN | Signal synchronized with commercial power source frequency. This is the basic timing for time processing of LSI.  |
| 27 | R81 | IN | Signal coming from tact switch. When either of tact switches SW1-SW4 is touched, a corresponding signal out of R60, R61, R62 and R63 will be input into R81. When no key is touched, the signal is held at "H" level. |
| 28 | INT1 | IN | Signal coming from encoder. Signal similar to R73. Pulse signals are input into INT1. |
| 29 | R83 | OUT | Terminal not used. |
| 30-32 | R90-R92 | OUT | Terminal not used. |
| 33 | XIN | IN | Internal clock oscillation frequency setting input. The internal clock frequency is set by inserting the capacitor and resistor circuit with respect to XOUT terminal. |
| 34 | XOUT | OUT | Internal clock oscillation frequency control output. Output to control oscillation input of XIN. |
| 35 | RESET | IN | Auto clear terminal. Signal is input to reset the LSI to the initial state when power is supplied. Temporarily set "L" level the moment power is supplied, at this time the LSI is reset. Thereafter set at "H" level. |
| 36 | HOLD | IN/OUT | Connected to VDD. |
| 37 | VLC | IN | Signal synchronized with commercial power source frequency. Signal similar to VSS. |
| 38 | COM1 | OUT | Common data signal: COM1. Connected to LCD (Pin No. 1) |
| 39 | COM2 | OUT | Common data signal: COM2. Connected to LCD (Pin No. 2) |
| 40 | COM3 | OUT | Common data signal: COM1. Connected to LCD (Pin No. 3) |
| 41 | COM4 | OUT | Terminal not used. |
| 42 | VDD | IN | Power source voltage input terminal. Connected to VC. |

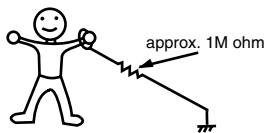
SERVICING OF TOUCH CONTROL PANEL

1. Precautions for Handling Electronic Components

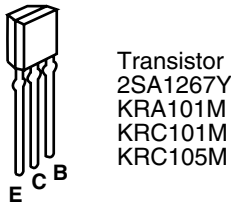
This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

- 1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
- 2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Shapes of Electronic Components



3. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so.

To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven :

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD .

Therefore, when checking the performance of the touch control panel, put the outer cabinet on the oven to avoid touching the high voltage transformer, or unplug the primary terminal (connector) of the high voltage transformer to turn it off; the end of such connector must be insulated with an insulating tape. After servicing, be sure to replace the leads to their original locations.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated.

For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is so long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

4. Servicing Tools

Tools required to service the touch control panel assembly.

- 1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
- 2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
- 3) Others: Hand tools

5. Other Precautions

- 1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
- 2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
- 3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
- 4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
- 5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

1. CARRY OUT 3D CHECKS.
2. Make sure that a definite "click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch heads to rise, it is then possible to hear a "click" as the door switches operate.)
3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Carry out any remedial work that is necessary before operating the oven.

Do not operate the oven if any of the following conditions exist;

1. Door does not close firmly.

Please refer to 'OVEN PARTS, CABINET PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

OUTER CASE REMOVAL

To remove the outer case, proceed as follows.

1. Disconnect oven from power supply.
2. Open the oven door and wedge it open.
3. Remove the screws from rear and along the side edge of case.
4. Slide the entire case back about 3cm to free it from retaining clips on the cavity face plate.
5. Lift the entire case from the oven.

6. Discharge the H.V. capacitor before carrying out any further work.

7. Do not operate the oven with the outer case removed.

N.B.; Step 1, 2 and 6 form the basis of the 3D checks.

CAUTION: DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

HIGH VOLTAGE COMPONENTS REMOVAL

(HIGH VOLTAGE CAPACITOR AND HIGH VOLTAGE RECTIFIER ASSEMBLY)

To remove the components, proceed as follows.

1. CARRY OUT 3D CHECKS
2. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.
3. Remove one (1) screw holding earth side terminal of high voltage rectifier assembly, and remove capacitor holder.
4. Remove one (1) screw holding capacitor holder to the oven cavity.
5. Release the capacitor holder from the duct.

6. Remove the capacitor from the capacitor holder.

7. Now high voltage rectifier assembly and capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (EARTH) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH AN EARTHING SCREW.

POWER TRANSFORMER REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the filament leads of the power transformer from high voltage capacitor and the magnetron.
3. Disconnect the H.V. wire A from the power transformer.

4. Remove the two (2) screws and one (1) washer holding the transformer to base plate.

5. Remove the transformer.

6. Now, the power transformer is free.

MAGNETRON REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the air separate duct B from the chassis support and the air intake duct.
3. Disconnect the H.V. wire B and filament lead of the transformer from the magnetron.

4. Remove the one (1) screw holding the chassis support to the magnetron.

5. Remove the one (1) screw holding the chassis support to the oven back plate.

6. Remove the one (1) screw holding the chassis support to the magnetron.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

7. Unclip the noise unit from the fan duct and lift the chassis support.
8. Unclip the air separator duct from the fan duct and remove the air separator duct.
9. Move the air intake duct to left.
10. Remove the air deflector from the magnetron.
11. Carefully remove four (4) screws holding magnetron to waveguide, when removing the screws hold the magnetron to prevent it from falling.

FAN MOTOR REMOVAL

1. CARRY OUT 3D CHECKS
2. Remove the one (1) screw holding the noise filter to the chassis support.
3. Release the noise filter from the tabs of the fan duct.
4. Disconnect the wire leads from the fan motor.
5. Remove the one (1) screw holding the capacitor holder to the oven cavity back plate.

CONTROL PANEL REMOVAL

1. CARRY OUT 3D CHECKS
2. Disconnect the main harness from the control panel.
3. Remove the one (1) screw holding the control panel to the oven cavity.

TURNTABLE MOTOR REMOVAL

1. Disconnect the oven from power supply.
2. Remove the turntable motor cover by snipping of material in four corners.
3. Where the corners have been snipped off bend the corners areas flat. No sharp edges must be evident after removal of TT motor cover.

TURNTABLE COUPLING REMOVAL

1. Remove the turntable motor, refer to "Turntable Motor Removal".
2. Pull the coupling out of the hole in the oven cavity.
3. At that time the turntable coupling will be free.

CAUTION: REPLACE THE PACKING AT THE SAME TIME WHEN REPLACING THE COUPLING. BECAUSE THE PACKING MAY BE DAMAGED BY PULLING OUT THE COUPLING.

12. Remove the magnetron from the waveguide with care so that the magnetron antenna is not hit by any metal object around the antenna.
13. Remove the magnetron cushion from the magnetron.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

6. Release the tabs of the capacitor holder from the fan duct.
7. Remove the fan duct from the oven.
8. Remove the fan blade assembly from the fan motor.
9. Remove the two (2) screws and two (2) nuts holding the fan motor to the fan duct.
10. Now, the fan motor is free.

4. Lift up the control panel assembly and pull it forward. Now, the control panel assembly is free.

4. Disconnect the wire lead from turntable motor and remove the 2 screws holding the turntable motor.
5. Turntable motor is now free.
6. After replacement use the one (1) screw allocated to fit the TT motor cover.

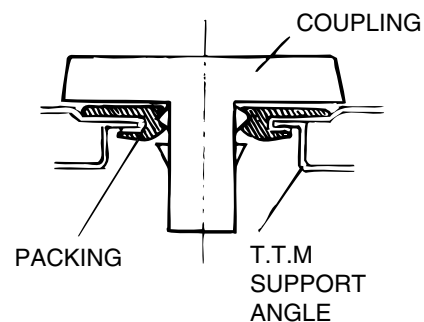


Figure C-1. Turntable Coupling

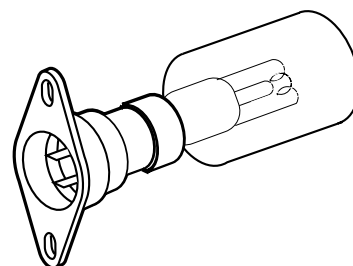


Figure C-2. Oven lamp

OVEN LAMP REMOVAL

1. CARRY OUT 3D CHECKS
2. Release the terminals from the oven lamp.
3. Lift up the oven lamp from its retaining clips.
4. Now, the oven lamp is free.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

MONITORED LATCH SWITCH, STOP SWITCH AND MONITOR SWITCH REMOVAL

1. CARRY OUT 3D CHECKS.
2. Remove the control panel assembly referring to "CONTROL PANEL REMOVAL".
3. Disconnect the leads from all switches.
4. Remove the two (2) screws holding the latch hook to the oven cavity.
5. Remove the latch hook.
6. Push the retaining tab slightly and remove the switch.

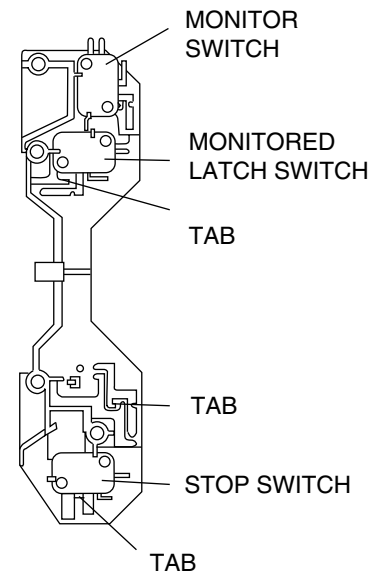


Figure C-3. Switches

MONITORED LATCH SWITCH, STOP SWITCH AND MONITOR SWITCH ADJUSTMENT

If the monitored latch switch, stop switch and monitor switch do not operate properly due to a mis-adjustment, the following adjustment should be made.

1. CARRY OUT 3D CHECKS
2. Loosen the two (2) screws holding the latch hook to the oven cavity front flange.
3. With door closed, adjust the latch hook by moving it back and forward, or up and down. In and out play of the door allowed by the latch hook should be less than 0.5 mm. The horizontal position of the latch hook should be placed where the monitor switch and activated with the door closed. The vertical position of the latch hook should be placed where the monitored latch switch and stop switch have activated with the door closed.
4. Secure the screws with washers firmly.
5. Make sure the monitored, latch switch, stop switch and monitor switch operation. If those switches have not activated with the door closed, two (2) screws holding latch hook to oven cavity front flange and adjust the latch hook position.

After adjustment, make sure of following:

1. In and out play of door remains less than 0.5 mm when latched position. First check latch hook position, pushing and pulling the door toward the oven face. The results (play of the door) should be less than 0.5 mm.
2. The contacts (COM - NO) of monitored latch switch and stop switch interrupt the circuit before the door can be opened.

3. The contacts (COM - NC) of the monitor switch close when the door is opened.
4. The contacts (COM - NO) of the monitored latch switch open when the door is opened.
5. Re-install outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

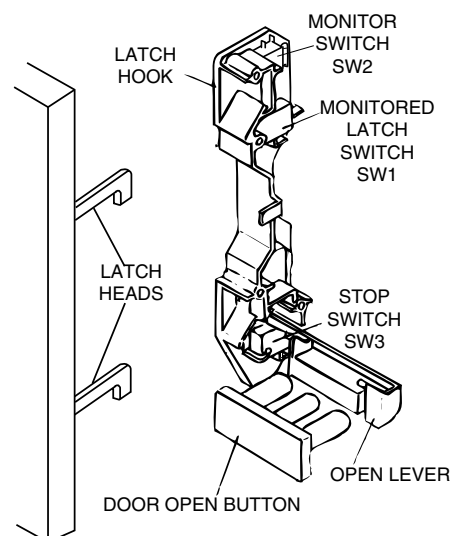


Figure C4 Latch Switches Adjustment

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

DOOR REPLACEMENT

REMOVAL

1. CARRY OUT 3D CHECKS.
2. Push the open button and open the door slightly.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and door frame as shown in Figure C-5 to free engaging parts.
4. Release choke cover from door panel.
5. Now choke cover is free.

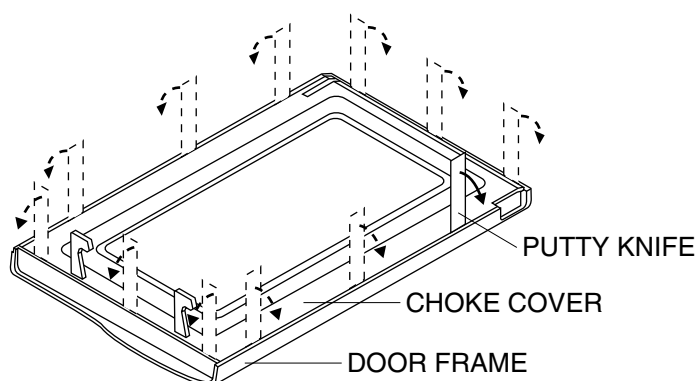


Figure C-5. Door Disassembly

6. Release two (2) pins of door panel from two (2) holes of upper and lower oven hinges by lifting up.
7. Now, door sub assembly is free from oven cavity.
8. Remove the four (4) screws holding the door panel to the door frame.
9. Release door panel from eight (8) tabs of door frame by sliding door panel downward.
10. Now, door panel is free.
11. Slide latch head upward and remove it from door frame, releasing latch spring from door frame and latch head.
12. Now, latch head and latch spring are free.
13. Remove the two (2) screws holding the glass stopper to the door frame.
14. Remove the glass stopper from the door frame.
15. Slide the front door glass leftwards and then slide upwards to release the tabs holding it.
16. Now, the front door glass is free

RE-INSTALL

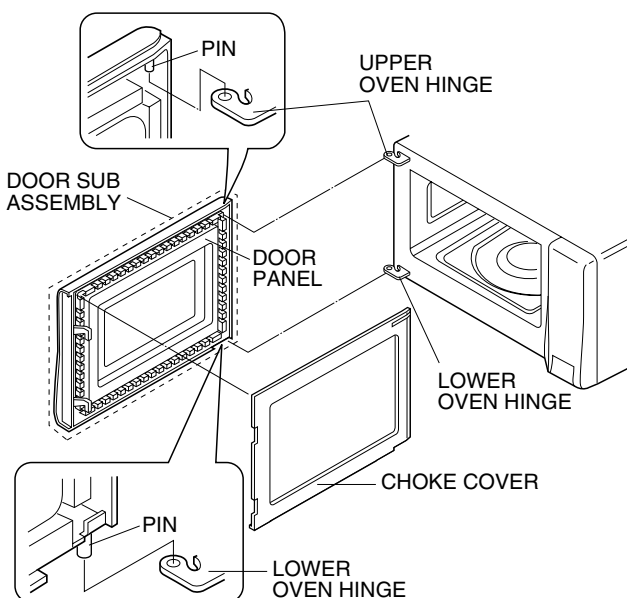
1. Re-install the front door glass to the door frame as follows.
 - 1) Insert the upper edge of the front door glass into the six (6) tabs of the door frame.
 - 2) Slide the front door glass downwards and insert the lower edge of the front door glass into the six (6) tabs of the door frame.
 - 3) Slide the front door glass rightwards and insert the right edge of the front door glass into the one (1) tab of the door frame.

2. Re-install the glass stopper to the door frame as follows.
 - 1) Re-install the glass stopper to the door frame so that the two (2) holes of the glass stopper meet the two (2) pins of the door frame.
 - 2) Hold the glass stopper to the door frame with the two (2) screws.
3. Re-install the latch spring to the latch head. Re-install the latch spring to the door frame. Re-install latch head to door frame.
4. Re-install door panel to door frame by fitting eight (8) tabs of door frame to eight (8) holes of door panel.
5. Fit the door panel to the door frame with four (4) screws.
6. Insert two (2) pins of door panel on two (2) hole of upper and lower oven hinges.
7. Re-install choke cover to door panel.

Note: After any service to the door;

Make sure that door sensing switch and monitored latch switch are operating properly.

Figure C-6. Door Replacement



MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of $5\text{mW}/\text{cm}^2$ at any point 5cm or more from external surface of the oven.

PREPARATION FOR TESTING:

Before beginning the actual test for leakage, proceed as follows;

1. Make sure that the test instrument is operating normally as specified in its instruction booklet.

Important:

Survey instruments that comply with the requirement for instrumentations as prescribed by the performance standard for microwave ovens must be used for testing.

Recommended instruments are:

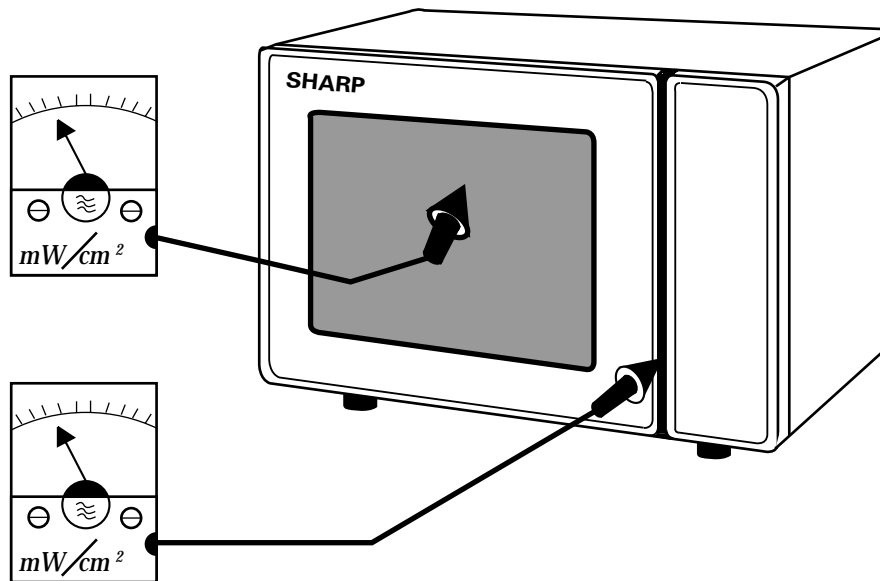
NARDA 8100

NARDA 8200

HOLADAY HI 1500

SIMPSON 380M

2. Place the oven tray into the oven cavity.
3. Place the load of $275 \pm 15\text{ml}$ of water initially at $20 \pm 5^\circ\text{C}$ in the center of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic. The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
5. Move the probe slowly (not faster than $2.5\text{cm}/\text{sec.}$) along the gap.
6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

TEST DATA

TEST DATA AT A GLANCE

| Parts | Symbol | Value / Data |
|------------------------|--------|---|
| Fuse | F1 | F8A / 250V |
| Thermal cut-out (MG) | TC1 | 125°C |
| Thermal cut-out (OVEN) | TC2 | 125°C |
| Oven lamp | OL | 240-250 V 25W |
| High voltage capacitor | C | 1 μ F AC 2100V |
| Magnetron | MG | Filament < 1 Ω Filament – chassis ∞ ohm. |
| Power transformer | T | Filament winding < 1 Ω Secondary winding Approx. 127 Ω Primary winding Approx. 1.9 Ω |

TEST POINT ON CONTROL UNIT

| In/Out put terminal | Test Point | Volt | Resistance (Disconnect the power plug and close the door.) |
|---|---------------|------|--|
| Input terminal (Power supply) | RY.COM. - A5 | 230V | ∞ |
| Input terminal (Stop switch) | B1–B2 | – | 0.2 ohm. |
| Output terminal (Oven lamp, Fan motor, Turntable motor) | A1–A5 | 230V | Approx. 197 Ω |
| Output terminal (Power transformer) | NO. of RY2–A5 | 230V | Approx. 2.5 Ω |

WARNING: DISCONNECT THE PLUG WHEN MEASURING RESISTANCE

WIRING / RE-WIRING

WARNING: Before carrying out any work carry out 3D checks

- 1) **Disconnect** the supply.
- 2) **Door** opened, and wedged open.
- 3) **Discharge** high voltage capacitor.

RE-WIRING

Ensure the following:

1. Wires must not touch:
 - a) High voltage parts.
(Magnetron, high voltage transformer, high voltage capacitor and high voltage rectifier assembly)
 - b) Parts that become hot.
(Heating elements, oven lamp, oven cavity magnetron and high voltage transformer)
 - c) Sharp edges.
(Bottom plates, oven cavity, waveguide flange, chassis support and other metallic parts)
 - d) Movable parts.
(Fan blade, any motor, switch, switch lever and open button)
2. Positive lock connectors are fitted correctly. Ensure the locking pin is located correctly.
3. Wires are connected correctly as per pictorial diagram.
4. No wire leads are trapped by the outer wrap.



PICTORIAL DIAGRAM

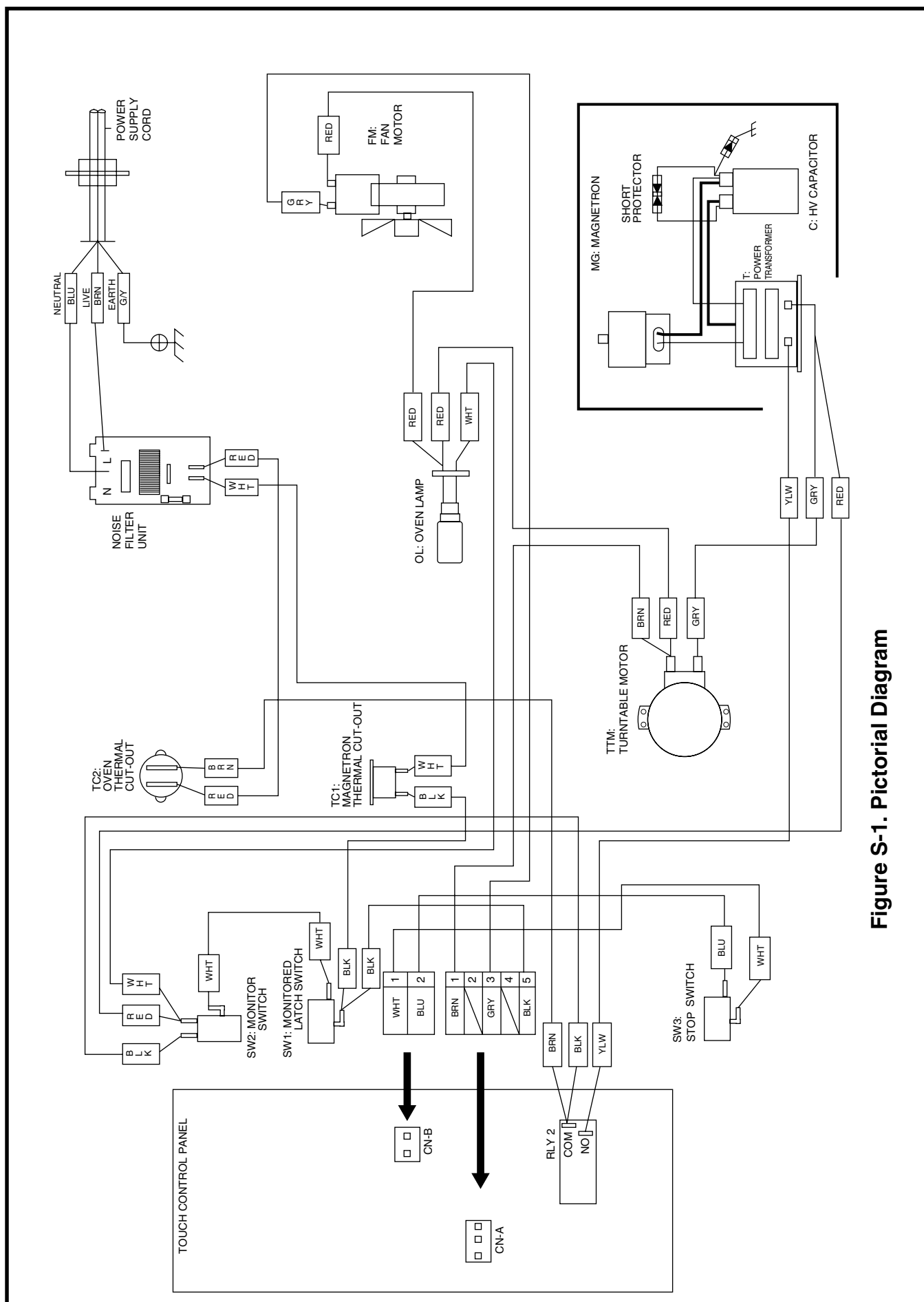


Figure S-1. Pictorial Diagram

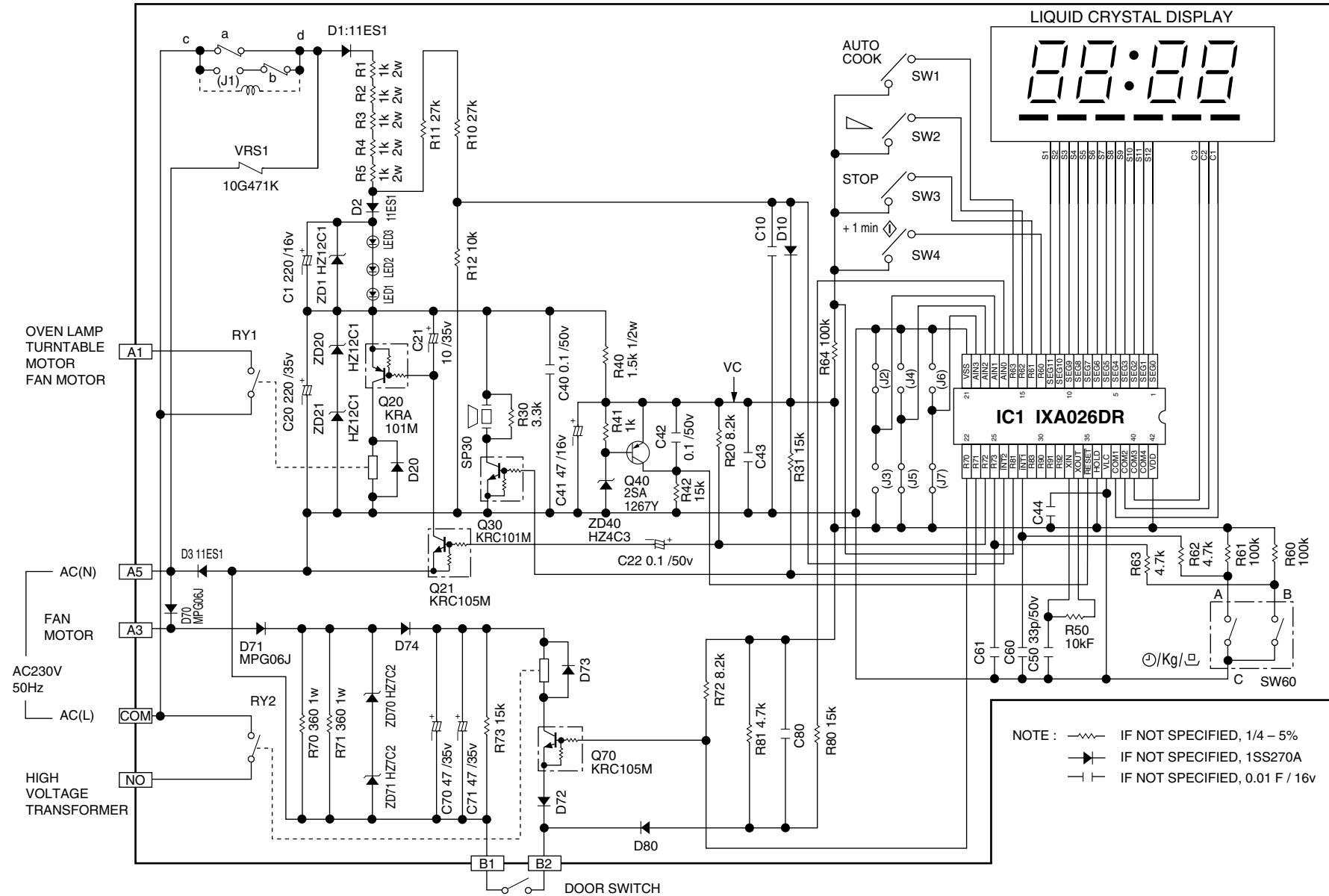


Figure S-2. Control Panel Circuit

PRINTED WIRING BOARD DIAGRAM

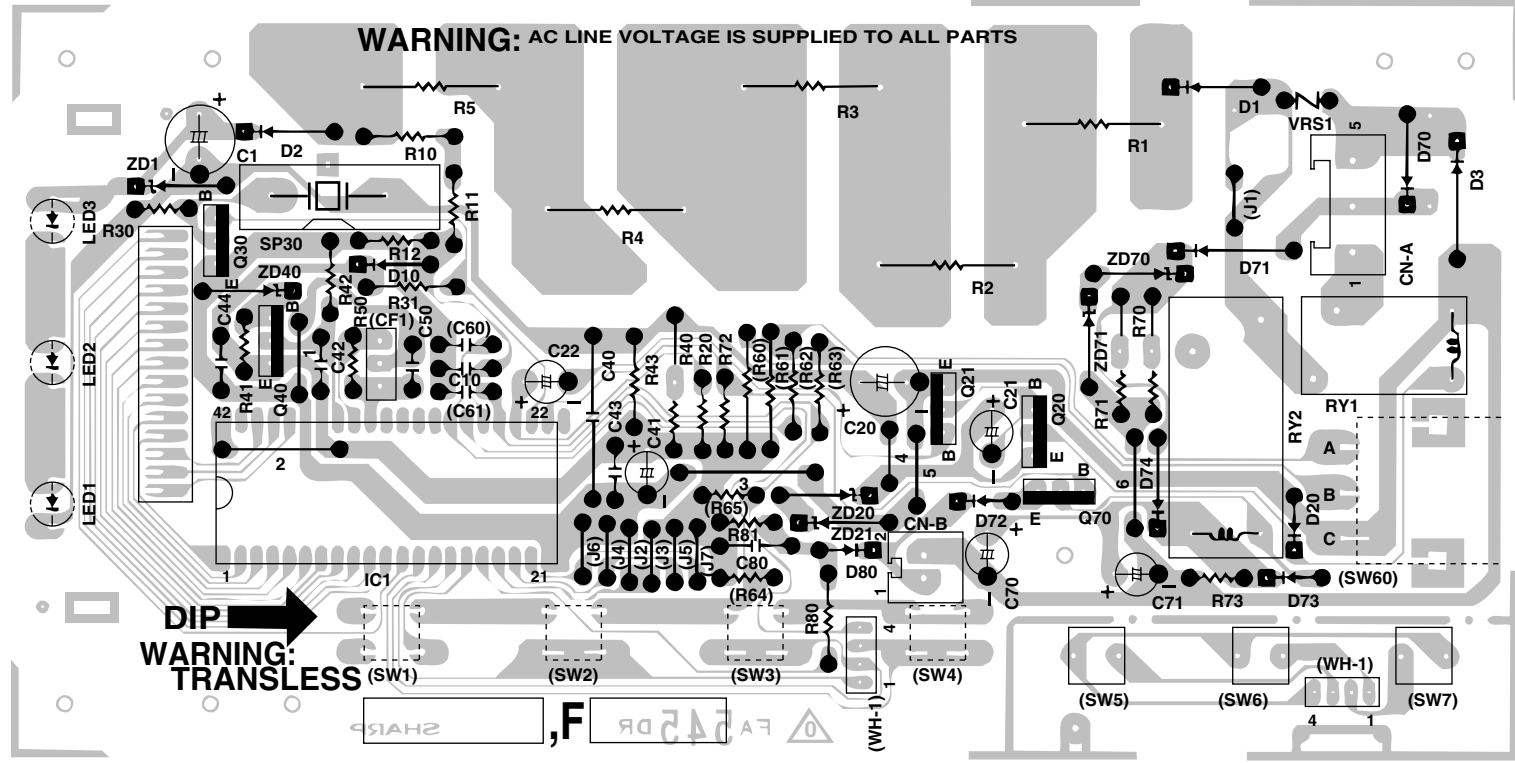


Figure S-3. Printed Wiring Board

PARTS LIST

Note: The parts marked “*” are used in voltage more than 250V. The parts marked “Δ” may cause undue microwave exposure when damaged, loosened or removed. “§” MARK: SPARE PARTS-DELIVERY SECTION

| REF. NO. | PART NO. | § | DESCRIPTION | Q'TY | CODE |
|----------|----------|---|-------------|------|------|
|----------|----------|---|-------------|------|------|

ELECTRIC PARTS

| | | | | | | | |
|-----|-----|---------------|---|-----------------------------------|---|----|-----|
| Δ * | MG | RV-MZA264WRE0 | U | Magnetron | 1 | BK | * Δ |
| * | C | RC-QZA222WRE0 | U | High voltage capacitor | 1 | AT | * |
| | SW1 | QSW-MA131WRE0 | U | Monitored latch switch | 1 | AK | |
| | SW2 | QSW-MA133WRE0 | U | Monitor switch "C" | 1 | AN | |
| | SW3 | QSW-MA131WRE0 | U | Stop switch | 1 | AK | |
| | FM | RMOTEA361WRE0 | U | Fan motor | 1 | AT | |
| | F1 | QFS-CAO25WRE0 | U | Fuse F8A | 1 | AC | |
| | OL | RLMPTA066WRE0 | U | Oven lamp | 1 | AC | |
| | TTM | RMOTDA227WRE0 | U | Turntable motor | 1 | AU | |
| | TC1 | RTHM-A098WRE0 | U | Thermal cut-out 125°C (Magnetron) | 1 | AH | |
| | TC2 | RTHM-A098WRE0 | U | Thermal cut-out 125°C (Oven) | 1 | AH | |
| * | T | RTRN-A016URE1 | U | Power transformer | 1 | BE | * |
| * | 1-1 | FH-DZA035WRE0 | U | H.V. rectifier assembly | 1 | AP | * |
| | 1-2 | FPWBFA308WRE2 | U | Noise filter | 1 | AQ | |
| | 1-3 | QACCA054WRE4 | U | Power supply cord | 1 | AM | |

CABINET PART

| | | | | | | | |
|---|-----|---------------|---|------------------------|---|----|---|
| Δ | 2-1 | GCABUA469WRT0 | U | Outer case cabinet (W) | 1 | AX | Δ |
| Δ | 2-1 | GCABUA445WRP0 | U | Outer case cabinet (B) | 1 | AX | Δ |
| | 2-2 | GDAI-A219WRP5 | U | Base plate | 1 | AS | |
| | 2-3 | GLEGPA028WRE0 | U | Foot | 4 | AA | |

CONTROL PANEL PARTS

| | | | | | | |
|--------|----------------|---|------------------------|---|----|--|
| 3-1 | DPWBFC029WRKZ | J | Control unit | 1 | BM | |
| 3-1A | QCNCMA430DRE0 | J | 3-pin connector (CN-A) | 1 | AG | |
| 3-1B | QCNCMA414DRE0 | J | 2-pin connector (CN-B) | 1 | AB | |
| 3-1C | RLCDSA036DRE0 | J | Liquid crystal display | 1 | AP | |
| 3-1D | LHLD-A179WRF0 | J | LED holder | 1 | AE | |
| 3-1E | PSHEPA601WRE0 | J | LED sheet | 1 | AD | |
| C1 | VCEAB31CW227M | J | Capacitor 220 uF 16V | 1 | AB | |
| C10 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 1 | AA | |
| C20 | VCEAB31VW227M | J | Capacitor 220 uF 35V | 1 | AC | |
| C21 | VCEAB31VW106M | J | Capacitor 10 uF 35V | 1 | AB | |
| C22 | VCEAB31HW104M | J | Capacitor 0.1 uF 50V | 1 | AM | |
| C40 | RC-KZA087DRE0 | J | Capacitor 0.1 uF 50V | 1 | AB | |
| C41 | VCEAB31CW476M | J | Capacitor 47 uF 16V | 1 | AA | |
| C42 | RC-KZA087DRE0 | J | Capacitor 0.1 uF 50V | 1 | AA | |
| C43-44 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 2 | AA | |
| C50 | VCCCF61HH330J | J | Capacitor 33 pF 50V | 1 | AB | |
| C60-61 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 2 | AA | |
| C70-71 | VCEAB31VW476M | J | Capacitor 47 uF 35V | 2 | AA | |
| C80 | VCKYD11CY103N | J | Capacitor 0.01 uF 16V | 1 | AA | |
| D1-3 | VHD11ES1///-1 | J | Diode (11ES1) | 3 | AB | |
| D10 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA | |
| D20 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA | |
| D70-71 | VHDMPG06J///-1 | J | Diode (MPG06J) | 2 | AD | |
| D72-74 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 3 | AA | |
| D80 | VHD1SS270A/-1 | J | Diode (1SS270ATA) | 1 | AA | |
| IC1 | RH-IXA026DRZZ | J | LSI | 1 | AN | |
| LED1-3 | VHPSLP7117E-3 | J | Light emitting diode | 3 | AC | |
| Q20 | VSKRA101M///-3 | J | Transistor (KRA101M) | 1 | AB | |
| Q21 | VSKRC105M///-3 | J | Transistor (KRC105M) | 1 | AB | |
| Q30 | VSKRC101M///-3 | J | Transistor (KRC101M) | 1 | AB | |
| Q40 | VS2SA1267Y/-3 | J | Transistor (2SA1267Y) | 1 | AA | |
| Q70 | VSKRC105M///-3 | J | Transistor (KRC105M) | 1 | AB | |
| R1-5 | VRS-L63DA102J | J | Resistor 1.0k ohm 2W | 5 | AB | |
| R10-11 | VRD-B12EF273J | J | Resistor 27k ohm 1/4W | 2 | AA | |
| R12 | VRD-B12EF103J | J | Resistor 10k ohm 1/4W | 1 | AA | |
| R20 | VRD-B12EF822J | J | Resistor 8.2k ohm 1/4W | 1 | AB | |
| R30 | VRD-B12EF332J | J | Resistor 3.3k ohm 1/4W | 1 | AA | |
| R31 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA | |
| R40 | VRD-B12HF152J | J | Resistor 1.5k ohm 1/2W | 1 | AA | |
| R41 | VRD-B12EF102J | J | Resistor 1.0k ohm 1/4W | 1 | AA | |
| R42 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA | |

PARTS LIST

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| REF. NO. | PART NO. | § | DESCRIPTION | Q'TY | CODE |
|----------|----------|---|-------------|------|------|
|----------|----------|---|-------------|------|------|

CONTROL PANEL PARTS contin.....

| | | | | | |
|---------|---------------|---|--------------------------------|---|----|
| R50 | VRN-B12EK103F | J | Resistor 10k ohm 1/4W | 1 | AA |
| R60-61 | VRD-B12EF104J | J | Resistor 100k ohm 1/4W | 2 | AA |
| R62-63 | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 2 | AA |
| R64 | VRD-B12EF104J | J | Resistor 100k ohm 1/4W | 1 | AA |
| R70-71 | VRS-B13AA361J | J | Resistor 360 ohm 1W | 2 | AB |
| R72 | VRD-B12EF822J | J | Resistor 8.2k ohm 1/4W | 1 | AB |
| R73 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R80 | VRD-B12EF153J | J | Resistor 15k ohm 1/4W | 1 | AA |
| R81 | VRD-B12EF472J | J | Resistor 4.7k ohm 1/4W | 1 | AA |
| RY1 | RRLY-A080DRE0 | J | Relay (OJ-SH-124LM) | 1 | AG |
| RY2 | RRLY-A105DRE0 | J | Relay (OMIF-S-112LM-SP) | 1 | AN |
| SP30 | RALM-A014DRE0 | J | Buzzer (PKM22EPT-THAI) | 1 | AG |
| SW1-4 | QSW-PA004DRE0 | J | Tact switch | 4 | AB |
| SW60 | RVR-BA018WRE0 | J | Encoder | 1 | AL |
| VRS1 | RH-VZA032DRE0 | J | Varistor (10G471K) | 1 | AE |
| ZD1 | VHEHZ12C1//-1 | J | Zener diode (HZ12C1) | 1 | AA |
| ZD20-21 | VHEHZ12C1//-1 | J | Zener diode (HZ12C1) | 2 | AA |
| ZD40 | VHEHZ4C3///-1 | J | Zener diode (HZ4C-3) | 1 | AA |
| ZD70-71 | VHEHZ7C2///-1 | J | Zener diode (HZ7C2) | 2 | AA |
| 3- 2 | GMADIA005URF0 | U | Display window | 1 | AE |
| 3- 3 | HPNLCW046URR0 | U | Control panel frame [R-333(W)] | 1 | AQ |
| 3- 3 | HPNLCB023URR0 | U | Control panel frame [R-333(B)] | 1 | AQ |
| 3- 4 | JBTN-L017URF0 | U | Key button [R-333(W)] | 1 | AD |
| 3- 4 | JBTN-A025URF0 | U | Key button [R-333(B)] | 1 | AD |
| 3- 5 | JBTN-L013URF0 | U | Start button [R-333(W)] | 1 | AD |
| 3- 5 | JBTN-A077URF0 | U | Start button [R-333(B)] | 1 | AD |
| 3- 6 | JKNBKA018URF0 | U | Rotary button [R-333(W)] | 1 | AD |
| 3- 6 | JKNBKA040URF0 | U | Rotary button [R-333(B)] | 1 | AD |
| 3- 7 | JBTN-A017URF0 | U | Open button [R-333(W)] | 1 | AE |
| 3- 7 | JBTN-A019URF0 | U | Open button [R-333(B)] | 1 | AE |
| 3- 8 | LSTPPA005URF0 | U | Stopper | 1 | AC |
| 3- 9 | MSPRCA045WRE0 | U | Open button spring | 1 | AA |
| 3- 10 | PSHEPA001URE0 | U | Display window film | 1 | AD |
| 3- 11 | XEPSD30P10XS0 | J | Screw; 3mm x 10mm | 5 | AA |

OVEN PARTS

| | | | | | |
|------|---------------|---|-------------------------|---|----|
| 4-1 | FOVN-A004URT0 | U | Oven cavity | 1 | BL |
| 4-2 | LBNDKA107WRP1 | U | Capacitor holder | 1 | AD |
| 4-3 | PHOK-A078WRF5 | U | Latch hook | 1 | AH |
| 4-4 | NFANJA001URE0 | U | Fan blade | 1 | AF |
| 4-5 | PDUC-A637WRF2 | U | Fan duct | 1 | AL |
| 4-6 | LANGFA155WRP7 | U | Chassis support | 1 | AF |
| 4-7 | PPACGA108WRE0 | U | Packing | 1 | AC |
| 4-8 | PCUSUA340WRP2 | U | Air deflector cushion | 1 | AA |
| 4-9 | PCUSGA273WRP0 | U | Air separator | 1 | AC |
| 4-10 | MHNG-A367WRP4 | U | Oven hinge | 1 | AG |
| 4-11 | MLEVPA001URF3 | U | Open lever | 1 | AE |
| 4-12 | NCPL-A042WRF1 | U | Coupling | 1 | AD |
| 4-13 | PCOVPA308WRE1 | U | Waveguide cover | 1 | AE |
| 4-14 | PFILWA042WRP0 | U | Lamp filter | 1 | AB |
| 4-16 | PDUC-A606WRF1 | U | Air intake duct | 1 | AK |
| 4-18 | PSPAGA001WRE0 | U | Vibration proof cushion | 1 | AA |

DOOR PARTS

| | | | | | |
|------|---------------|---|-------------------------|---|----|
| 5-1 | FDORFA287WRT0 | U | Door panel sub assembly | 1 | AW |
| 5-2 | GCOVHA352WRF3 | U | Choke cover | 1 | AH |
| 5-3 | GWAKPB010URR0 | U | Door frame (B) | 1 | AR |
| 5-3 | GWAKPW005URR0 | U | Door frame (W) | 1 | AR |
| 5-4 | PGLSPA020URR0 | U | Door glass | 1 | AX |
| 5-5 | LSTPPA147WRF1 | U | Latch head | 1 | AE |
| 5-6 | MSPRTA141WRE0 | U | Latch spring | 1 | AA |
| 5-7 | PSHEPA457WRE0 | U | Door film | 1 | AF |
| 5-9 | XEBSD30P06000 | J | Screw 3mm x 6 mm | 6 | AA |
| 5-10 | LSTPPA012URF0 | U | Glass stopper | 1 | AB |

PARTS LIST

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|----------|----------|---|-------------|------|------|
|----------|----------|---|-------------|------|------|

MISCELLANEOUS

| | | | | | |
|-------|---------------|---|---------------------------------|---|----|
| 6-1 | FROLPA002URK0 | U | Roller stay | 1 | AM |
| 6-2 | NTNT-A051WRE0 | U | Turntable | 1 | AN |
| 6-4 | TINS-A190URR0 | U | Instruction book | 1 | AS |
| * 6-6 | QW-QZA210WRE1 | U | H.V. wire B | 1 | AD |
| 6-7 | FW-VZA055URE0 | U | Main wire harness | 1 | AS |
| 6-8 | TCAUHA006URR0 | U | Combined caution label | 1 | AE |
| 6-10 | TLABMA130URR0 | U | Menu label (for face plate) (B) | 1 | AE |
| 6-10 | TLABMA129URR0 | U | Menu label (for face plate) (W) | 1 | AE |
| 6-11 | LHLDKA008WRF0 | U | P-Clip | 1 | AA |

SCREW, NUT AND WASHER

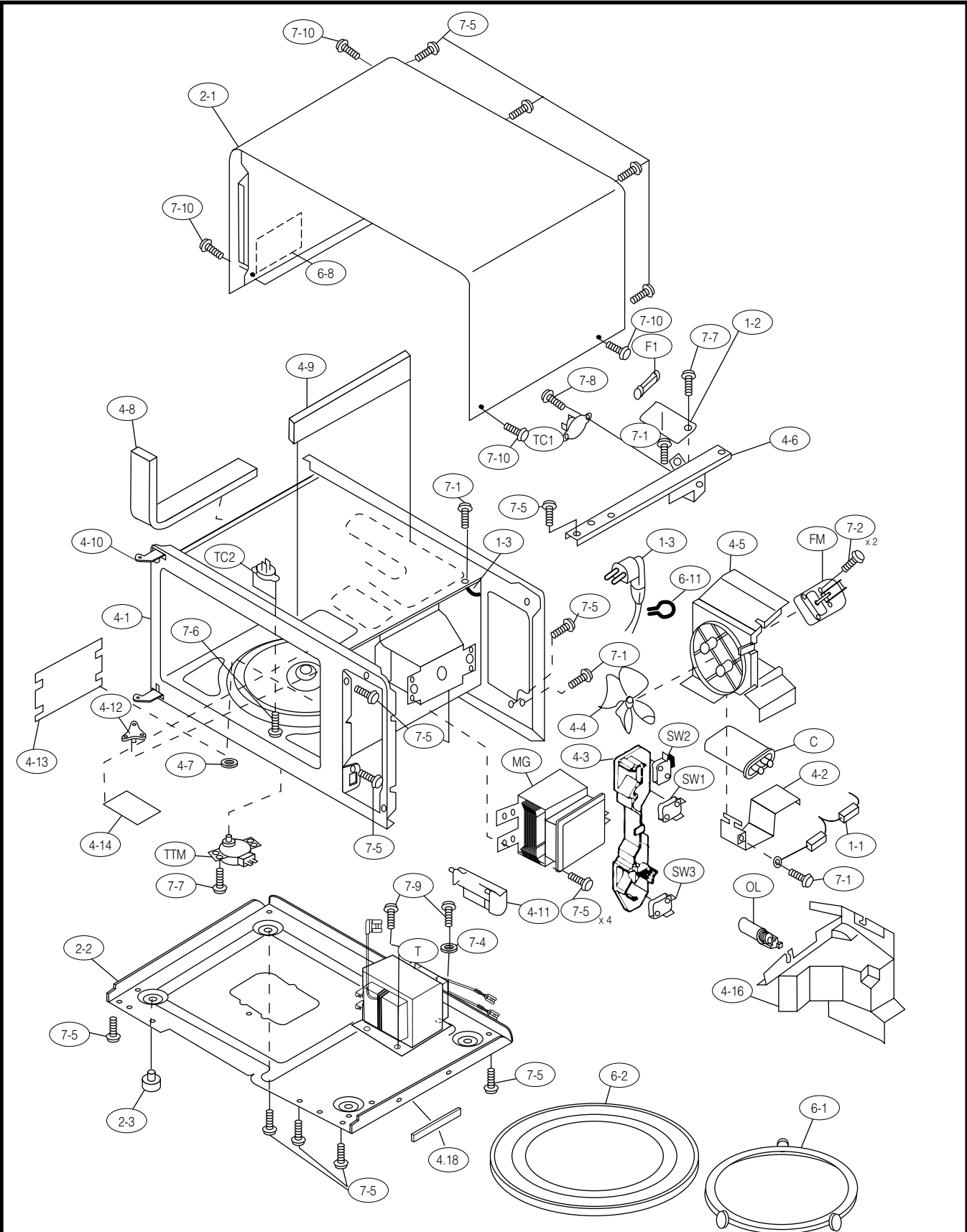
| | | | | | |
|------|---------------|---|--------------------------------|----|----|
| 7-1 | XHTSD40P08RV0 | J | Screw 4mm x 8mm | 4 | AA |
| 7-2 | XEPSD40P25000 | J | Screw 4mm x 25mm | 2 | AA |
| 7-4 | XWWS050-06000 | J | Washer 4mm x 0.6mm | 1 | AA |
| 7-5 | XOTSD40P12RV0 | J | Screw | 18 | AA |
| 7-6 | LX-LZA011WRE0 | U | Rivet | 2 | AB |
| 7-7 | XHPSD40P08K00 | J | Screw with SP washer 4mm x 8mm | 2 | AA |
| 7-8 | XCPSD30P06000 | J | Screw 3mm x 6mm | 1 | AA |
| 7-9 | XFPSD50P10KS0 | J | Screw 4mm x 10mm | 2 | AB |
| 7-10 | XOTSE40P12000 | J | Screw 4mm x 12mm (W) | 4 | AA |
| 7-10 | XOTSF40P12000 | J | Screw 4mm x 12mm (B) | 4 | AA |
| 7-11 | LX-EZA045WRE0 | J | TTM cover screw | 1 | AA |

HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

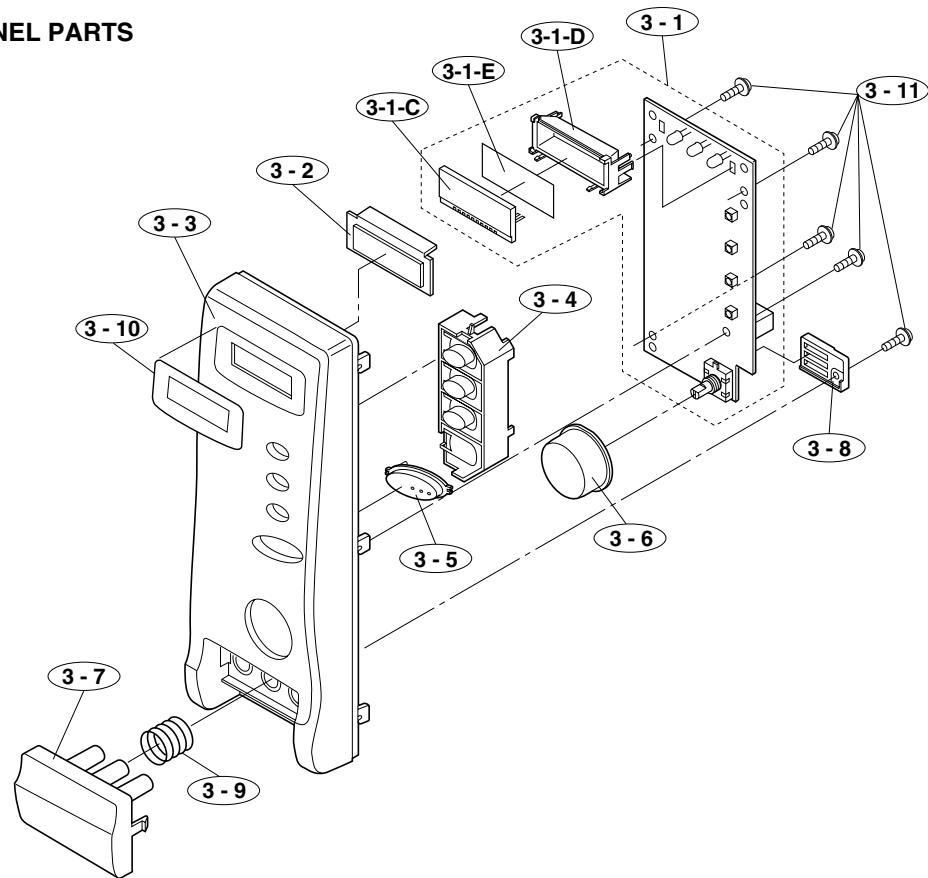
CABINET AND UNIT CHASSIS PARTS



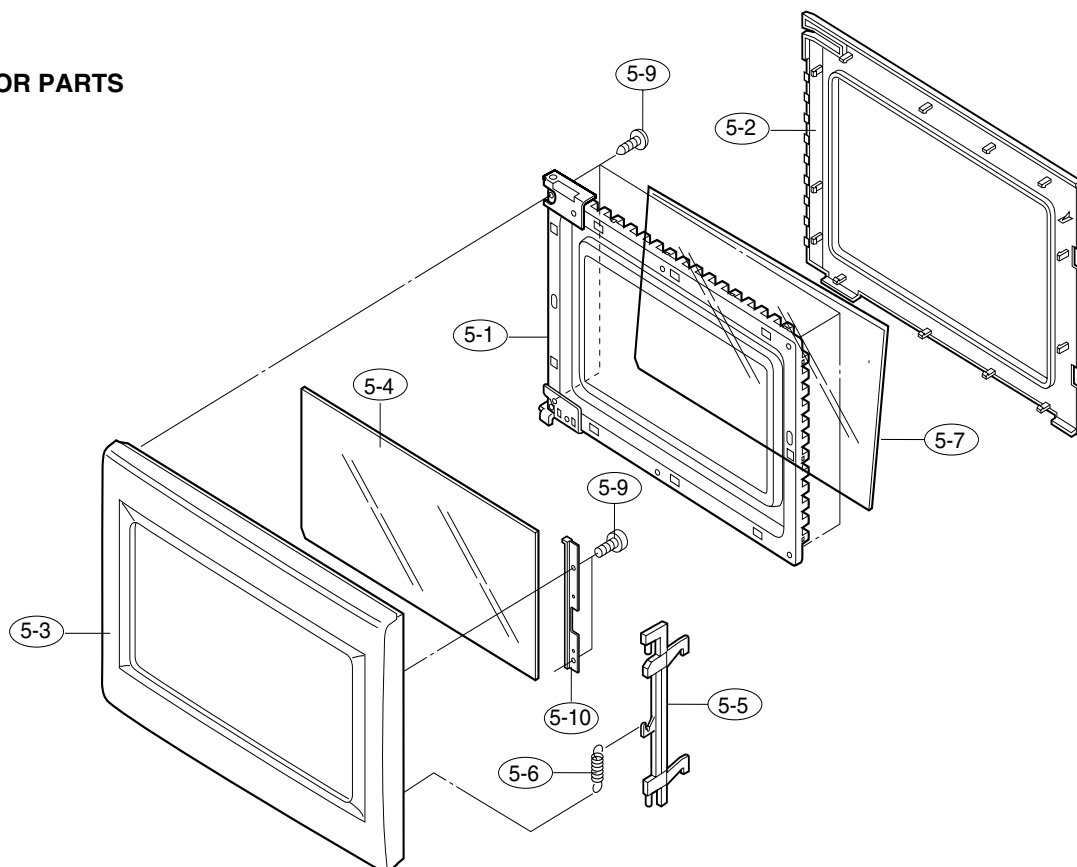
NOTE: In the event of removing the turntable motor cover this part should be refitted using screw connection:
LX-EZA045WRE0 (7-11)

CONTROL PANEL / DOOR PARTS

CONTROL PANEL PARTS

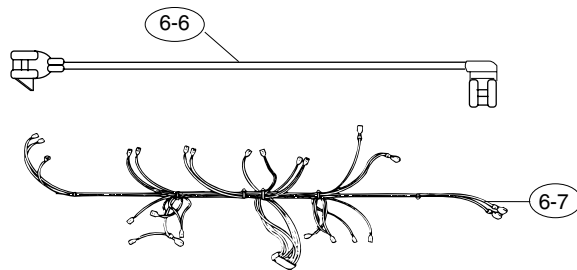


DOOR PARTS



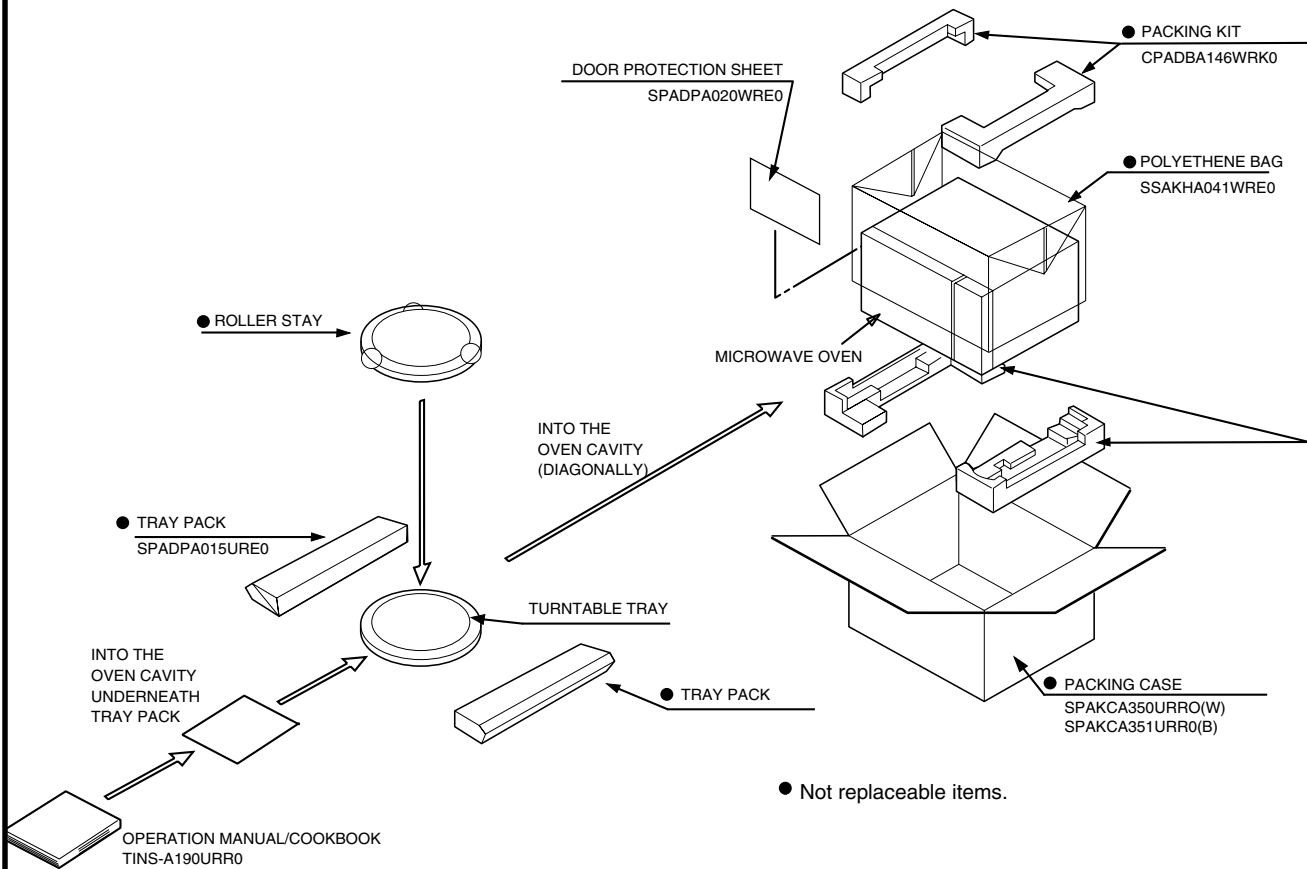
MISCELLANEOUS / PACKING & ACCESSORIES

MISCELLANEOUS



Actual wire harness may be different than illustration.

PACKING AND ACCESSORIES



SHARP®